TIME SPACE DIRECTION

Diversities In Cognitive Approach

Map making and Cartographic traditions
from the Indian Ocean region

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About

The Centre for Community Knowledge

The Centre for Community Knowledge (CCK) has been planned as a premier institutional platform in India in interdisciplinary areas of Social Sciences, to link academic research and teaching with dispersed work on Community Knowledge.

At a time when communities are faced with multiple challenges, the Centre for Community Knowledge, through its interdisciplinary approach, documents, studies and disseminates the praxis of community knowledge, so as to improve our understandings of our living heritage, and integrate community-based knowledge in the available alternatives. Drawn from living experience, and mostly unwritten, oral and practice based, community knowledge can play a crucial role in these transformative times in a number of areas, including the empowerment of marginal communities, adapting to environmental impacts and changes in public policy.

The Centre also aims to foster a multidisciplinary study of marginal knowledge traditions in collaboration with other individuals, institutions and Schools of the University. This will help to identify opportunities to integrate collected knowledge and approaches towards teaching and learning in the formal acadmic system.

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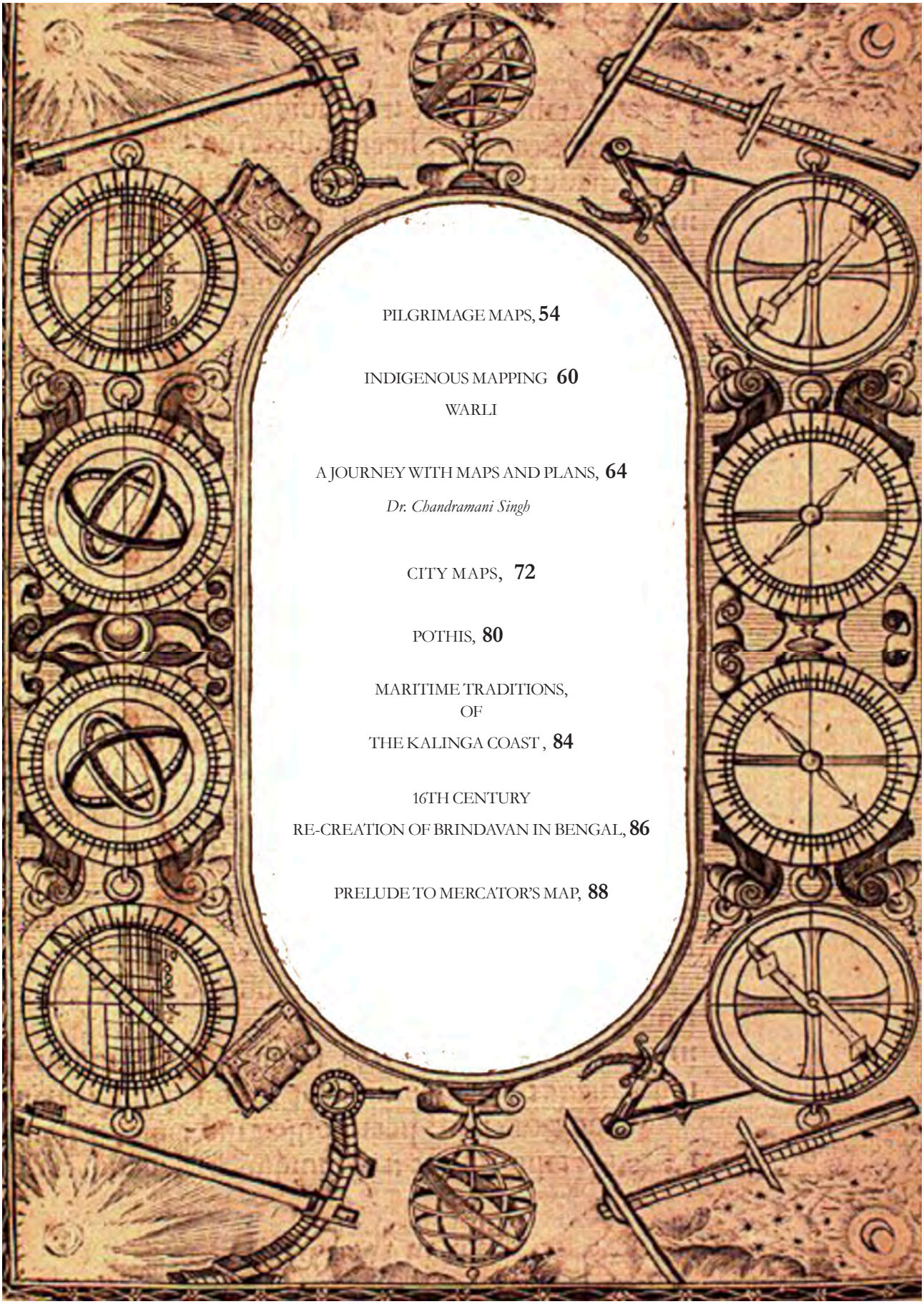

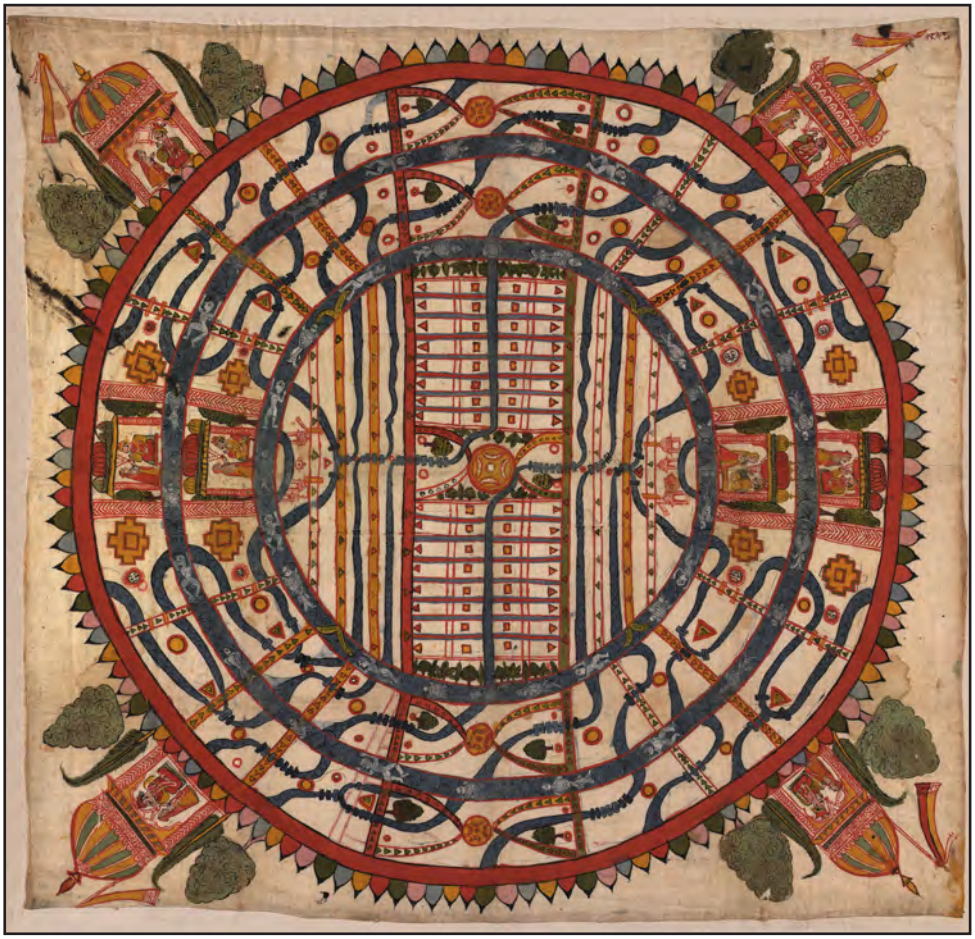

Manuṣyaḍoḳa, date 189-. From Western Rajasthan, 14 x 27cm. Source: Library of Congress, Washington, D.C

MAPS MATTER

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The Exhibition TIME, SPACE, DIRECTION showcases the evolution of cartographic representations of the Indian Ocean Region and divergences therein from antiquity to the pre- modern age. While a number of maps are evidently Eurocentric, an attempt has been made to exhibit regional divergences, including Indian approximations and indigenous mapping traditions. Although there are grounds to suppose that the subcontinent produced maps for various purposes for millennia before the advent of the Portuguese, virtually little in the way of earlier cartography or its various forms have been visible, even in comparison with those of the neighbouring regions of the Gulf, Arabian Sea and East Asia. Given the region's contributions to astronomy, geometry, mathematical sciences, this remains a matter for wonder. This, in turn, gives rise to a few questions: what kinds of cartographic tradition or mapping tradition were found in the region; what reasons can support existence of comparatively few specimens of charts and maps; how does one define 'map'; and should our 'western' understanding of maps lead us to dismiss other forms of representations of time, space and direction. In an attempt to redress this deficit, the current Exhibition has brought together number of examples of cartographic representation from traditions and communities around the Indian Ocean Region.

About a third of these maps are from the Bibliothèque Nationale de France from their exhibition, The Golden Age of Nautical Charts - When Europeans discovered the rest of the world, held between October 23, 2012 and January 27, 2013 in Paris. To these we have added Indian sources from the collections of various museums around the country, along with some found in private collections. By bringing together the different perspectives of mapmaking into

one collection, this Exhibition attempts to project the cartographic traditions of South Asia in an area hitherto dominated by Western scholarship.

The primary objective of the Exhibition is, therefore, to expand the canon of cartographic images of the Indian Ocean region. Unlike the conventional cartographic histories that look at map-making as a largely European invention, with its mathematically constructed 'scientific' maps that culminate in the 'scale' maps of the modern age, the current exhibition defines maps as, "graphic representations that facilitate a spatial understanding of things, concepts, processes or events in the human world[1] " Another objective is to show, visually, the transmission, exchange and subsequent development of knowledge between the Asian continent and the Mediterranean Region in connection with the traditional mapmaking practices. The third objective is to demonstrate the alternative methods which were developed in the Indian Ocean world to map time, space and direction, so as to enable travellers on land and sea to reach a variety of chosen destinations securely, which was also dependent on weather conditions.

In order to understand how the world and its oceans were defined across cultures in antiquity and pre-modern times, this Exhibition includes alternative cartographies, from star charts and cosmological maps to unique combinations of the physical and cosmological along with performative maps. By seeing how the maps were made and how they were used, their iconographic and artistic projections, the Exhibition brings together genres of South Asian maps that have received virtually little notice.

1.1 Divergences in Cartographic Traditions

The idea that our knowledge of our physical location helps us to understand who we are, is surely, as old as maps themselves. From the medieval T-O (terrarum orbis) schemes of Europe, which set Jerusalem squarely at the centre of the world, to modern satellite imagery, which renders even familiar neighbourhoods' maze-like form easily identifiable from above, maps have always represented unwieldy territories as tidy, governable units. In doing so, they have functioned primarily as political and ideological tools of empire or as Michel Foucault[2] opined, as a panopticon for surveillance and control.

Visualizing the earth at a time before the Europeans "discovered" the new world, the Americas, the ancient Greek, Claudius Ptolemy, in the second century CE, had the idea to project a sphere onto a plane using two variables

known as longitude (360 degrees from an arbitrarily chosen "prime" meridian) and latitude (180 degrees between the poles). This scheme allowed places to be mapped according to their coordinates, of which Ptolemy positioned some eight thousand across the inhabited earth or oikoumene. The Romans, true to form, were less interested in communities than in empire, and introduced the concept of imperium ad termini orbis terrarum (empire to the ends of the earthly sphere), also known as "let's map all we own." Here in the exhibition, we see this represented in the itinerarium (in effect, a road map) showing the cursus publicus, the road network in the Roman Empire. It covers Europe, North Africa and parts of Asia (the Middle East, Persia, and India). A symbolic depiction of the world, the representation is centred around its roads, stages and halts, rather than accuracy in the depiction of landscapes.

The European cosmological maps as reflected in the medieval mappaemundi, like the Jain cosmological maps, and the Tibetan Buddhist maps in the exhibition, present an alternate manner in which people have 'oriented' their existence and their hope for life beyond the 'earthly existence'. The representation of the goddess Pemako by transforming the body using real day-to-day practice makes the cosmological myth into a map embodying and conveying knowledge of terrain, space, topography, and different forms of movement. By plotting movement to construct space, movement transforms the metaphysical state of space into spatial categories such as this world/other world, forest/domestic, living/dead, or safe/dangerous.

This map-like quality of myth is seen in another Indian approximation in the exhibition, the Warli map paintings. Here by first plotting a route and then marking the space after its division by mode of movement– seasonal and temporal translocation– mythology, and natural world support the observation that in this tradition a mental map and practical space coexist. Bourdieu contends that the ordering of space represents an informed set of conceptual schemata, but that only practice creates meaning. At any given time the meaning given to a spatial order depends upon the nature of the activity being undertaken[3] .

A similar divergent view of maps is heard from an Onge islander in the Andamans, replying to the researchers question, "Why do you hope to see the same space while moving? One only hopes to reach the place at the end. All places in space are constantly changing. The creek is never the same. It grows larger and smaller as the mangrove forest keeps growing and changing the creek. You cannot remember a place by what it looks like. Your map tells lies.

Places change. Does your map say that? Does your map say when the stream is dry and gone or when it comes and overflows? We remember how to go and come back, not the places which are on the way of going and coming[4].

The Warli painted maps are clear examples of the importance of natural resources to the indigenous communities for sustenance if one notices the inclusion of the resources and the activities associated with them. Spatial and transition metaphors, especially in the field of ritual, focus on rituals as iconic embodiments of social transition through space make maps that are symbolic rather than signlike

1.2 Along the Ocean Rim

In the days of sailing ships, the predictability of the homeward winds of the monsoon system made the Indian Ocean the most benign environment in the world for long-range voyaging. This monsoon pattern also dictated that a passage from the far west of the ocean, say the Red Sea, to the far east, to Melaka, could not be accomplished non-stop; rather a stopover was necessary, until the correct monsoon came to continue one's voyage. This facilitated development of cartographic techniques in order to maximize the commercial importance of the subcontinent and its surrounding islands.

As Braudel wrote of the Mediterranean, "The different regions are connected not by the water, but by the peoples of the sea"[5]. Yet this is essential, for it is people, not water, that create unity and a recognisable Indian Ocean that historians can study. An interdisciplinary study on the Indigenous Traditions of Indian Navigation carried out in the 1980s and 90s by the Council of Scientific and Industrial Research in Lakshwadeep shows how seemingly isolated oceanic communities, in fact, constitute components of a mainstream tradition.

The study has shown the contribution of the subcontinent in the development of navigation, and reveals an overlap between the empirical seafaring and the academic tradition of Indian mathematics and astronomy, and also the role of instrumentation in navigation. The publication of the Rahmani of Kunhikunhi Malmi[6], one of the first Indian rutters (handbook of written sailing directions and geographic information for maritime navigation) filled in some of the gaps in the literature on Indian nautical tradition and instrumentation. Of interest is the mixed language of the text with portions based on Arabi-Malayalam,

Malayalam and Arabic, revealing a convergence of traditions from many sources, including the pre-Islamic Indian heritage and the Greco-Indian past.

By combining cartographic practices with the instruments of early sea faring and navigation, it is possible to see how transmission of navigation and cartographic knowledge moved from the East to the West, before returning as the "western scientific tradition" The Rahmani of Lakshwadeep islands, like the Pothis of Gujarat, are astonishing examples of these. The use of star tables and a nautical almanac to navigate the islands well precedes the creation of first Portolan charts.in Europe at the end of the 13th century.[7]

The epistemological origins of navigational cartography across civilisations work along parallel trajectories, like the Portolan charts of the Mediterranean, the Indian Ocean of European antiquity, can be seen as a paralleling in some ways, the knowledge of the pothis of the Arabian Sea, an open ocean.

1.3 Conclusion

As the TIME SPACE DIRECTION exhibition attempts to show, maps reveal how people perceive space, property, identity, life cycle, popular perceptions and beyond; and, as such, narrate or even "plot" literary and cultural developments, including travel narratives, economic developments, and burgeoning nationalism. Maps shape minds and control the imagination; andyet they also order the known and the unknown.

Given cartography's close association with positivist science that dates to the origins of statistical and thematic mapping in the early nineteenth Century, and with the central role that cartography played in geographical exploration and colonial survey, settlement and administration, it is little wonder that the 'map' has been a consistent subject for reform.

As a sophisticated icono-text, popularly and professionally regarded as a geographical research tool and medium of communication, maps and mapping approximations in their attempt to bring out in open the diversity, can also hide or paper over things that others may wish to conceal, as one can glimpse from the exhibits that track the trajectory of human intellectual thought and, even, biases through maps and related traditions. Maps are not just a genre

or mode of writing; rather, they constitute a discourse, or, as Lefebvre writes, "space is social morphology: it is to lived experience what form itself is to the living organism, and just as intimately bound up with function and structure."

References

1 B.Harley and David Woodward (eds), The History of Cartography (Chicago & London), two volumes (Volume 2 in three parts, part 3 edited by David Woodward and G.M.Lewis) (Chicago & London,1987-98)

2 Paul Rabinow (ed), The Foucault Reader (New York: Pantheon Books, 1984)

3 Pierre Bourdieu Outline of a Theory of Practice (Cambridge: Cambridge University Press 1977)

4 Vishvajit Pandya, Movement and Space: Andamanese Cartography in American Ethnologist, Vol. 17, No. 4 (Nov., 1990), 775-797.

5 Fernand Braudel, The Mediterranean and the Mediterranean World in the Age of Philip II, Volume 1, pg 276 (University of California Press, 1995)

6 Lotika Varadarajan (ed), The Rahmani of M.P. Kunhikunhi Malmai of Kavaratti: Sailing Manual of Lakshadweep (New Delhi: Manohar, 2004).

7 Paul Lunde, The Navigator Ahmad ibn Majid, Saudi Aramco World, Vol 56 No.4, July/August 2005 (pp 49-52)

MAPPAEMUNDI

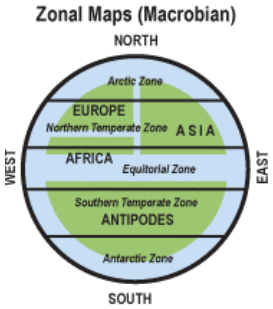
Mappaemundi is a Latin term used to describe the medieval European Maps of the World. Mappaemundi developed from about fifth to fifteenth century after Christ. One would well benefit from not using these to find any specific place or location in the world for they do not correspond with our modern understanding of world map; and rarely do they incorporate any graticules. The primary purpose of the mappaemundi was not to act as an aid in navigation but to illustrate classical learning, and the Christian knowledge. Mappaemundi can be regarded as cosmographical maps based on Christian world-view while simultaneously incorporating geographical knowledge of the 'then known world' along with the myths, and legends of the lands and people unknown. There is no standardised scale or measurements used for drawing up the mappaemundi though one does notice a sense of proportion. Given the nature of the mappaemundi, one finds –Bethlehem, Jerusalem or Roma – featuring clearly.

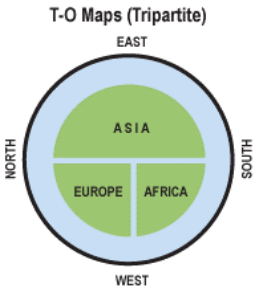
It can be said that the gridless-based structure of the mappaemundi reflected the hierarchical structure of the medieval society. A grid system implies that a uniform weightage is accorded to each region due to its objectivity. The mappaemundi were oriented to the east, a direction from which the sun rises associated with dawning of light; and also, not unimportantly, it was considered to be the location of 'earthly paradise' as clearly depicted by the vignette of Garden of Eden with Adam and Eve. The temptation of Adam and Eve also symbolises birth of knowledge also associated with light, and perhaps with the beginning of human history.

Another common feature of the medieval maps is the centre-stage given to Jerusalem. Edson opines that Jerusalem started getting the central space from about the thirteenth century, possibly because of the European involvement in the Crusades.

Most of these maps were part of manuscripts and were instructive in function; and as such have to be understood in the background of the texts that they were part of. Take for example, the title 'The Psalter Map' or 'a book or collection of Psalms. The Psalter Map and Ebstorf Map belong to a family of maps called Orisian-Isidorian, and are believed to have been derived from a common original. It is difficult to miss the presence of strangely formed humans in both, The Psalter Map and The Ebstorf Map. These monstrous races are found along the southern coast of Africa. The main varieties of mappaemundi[1] are :

a. Zonal or Macrobian maps that illustrate the concept of the division of the spherical world and its five climatic zones.



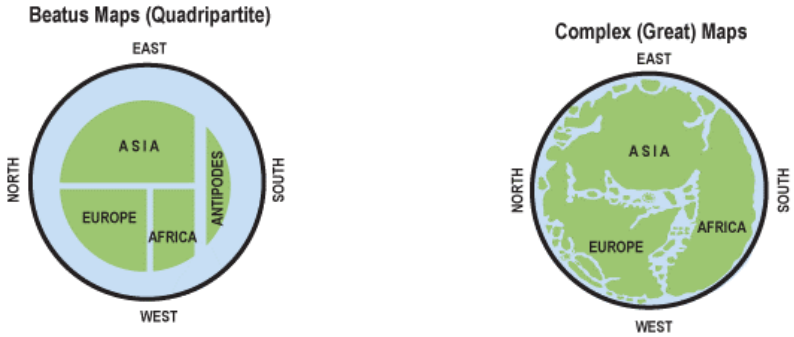


b. "T-O" or Tripartite maps illustrated the habitable portions of the world then known with the east located at the top. The landmass was illustrated as a circle divided into three portions as in the letter "T" representing the continents of Asia, Africa and Europe.

c. Quadripartite maps which amalgamated, in a manner, the Zonal and T-O maps. They illustrated the three known continents and the fourth one, Antipodes, separated by an equatorial sea. The Saint-Serve Beatus Map in this Exhibition is an example of such a map.

d. Maps which adopted the T-O scheme but were far more elaborate. Other than illustrating geographical features, they featured figures and stories from the Bible, mythology and history, including eroticised beasts, races and plants, etc which were also rendered in a more exotic form. The Ebstorf Map in this

Exhibition is an example of Complex map.



From about the mid Medieval era, mappaemundi gradually gave way to "Portolan charts" that were characterised with more accurate depictions of coastlines with loxodromes. The latter have also been included in the present Exhibition Time Space Direction.

1: Original diagram by John Hamer 2009

References

Akerman, James. R. And Robert W. Karrow Jr.(ed). Maps: Finding our place in the World. Chicago: The University of Chicago Press, 2007.

Edson, Evelyn. The World Map, 1300-1492: The Persistence of Tradition and Transformation. John Hopkins University Press, 2007.

Harley, J. B. and David Woodward (eds.) (1987) The History of Cartography, Volume I: Cartography Prehistoric, Ancient, and Medieval Europe and the Mediterranean. Chicago and London: University of Chicago Press

Schöller, Bettina. "Transfer of Knowledge: Mappae Mundi Between Texts and Images," in Peregrinations: Journal of Medieval Art and Architecture, Volume IV, Number I (Spring 2013).

The World Map from the Saint-Sever Beatus, c. 1050, Manuscript Saint-Sever Beatus, 37 x 57 cm Source: Bibliothèque nationale de France

This World Map, a derivative of the Saint Beatus of Liébana map, is not only the largest but also the most detailed one.

The original was made by a monk, Beatus of Liébana, to portray the dispersion of the Apostles after Pentecost in the prologue to the second book of the Commentary on the Apocalypse. While the original was lost, relatively reliable copies have survived. In this Globe, the earth is presented as a disk surrounded by the oceans. The land mass is divided into three continents- Asia in upper semi-circle, Africa in the lower right quarter circle an Europe in the lower left quarter circle. The Mare Rubrum or the Red Sea cuts off the African continent; and then branches into two gulfs – the Arabian Gulf and the Persian Gulf. One the other side of the Mare Rubrum , is a strip of land, which represents the southernmost edge of the earth, a place where the antipodians dwelt. The map is east oriented with a vignette of depicting the temptation of Adam and Eve. One can identify names of places- Spain, Italy, Asia Minor, Britain, Byzantne, Galilea, Persia, Indian, Etiopia, Libya. In the Mediterranean Sea, islands of Crete and Sicily are clearly marked.

The Psalter Map, c. 1265 ‚Mappamundi,
Author Unknown, Size: 9.5 cm high,Source: The British Library, London

Considered as one of the great medieval world maps, it probably adorned the bed chamber of King Henry III of England. It shows the geographical and historical knowledge of the time, in the frame of a salvation history. It is a very apt example of the religious cosmography that was evolving during the European Middle Ages. On top of the circular world is depicted Jesus Christ, the Saviour of the world, holing a T-O globe in his hand. He is surrounded by two angels who hold censers. The world is surrounded by ocean. The heads that are featured on the map represent the trade winds identifiable with their names inscribed therein. Aside from the important place names that featured on the mappamundi, biblical references are inscribed on the Psalter Map– story of Ark of Noah, Sea of Galilee where a large fish swims, and parting of the Red Sea by Moses to cite a few.

Ebstorf Mappamundi, c. 1234, Gervase of Ebtorf/ Tilbury , Originally painted on 30 stitched goatskins and measuring 12 ft x 12 ft, the original was destroyed in the bombing of Hanover, Germany in 1943.

The map is named after the place where it was preserved–a Benedictine monastery in Ebstorf. Reproduced here from colour facsimiles of the original, the Ebstrof mappamundi illustrates the "known world" and depicts Christian worldview within the body of Christ who seem to be holding the world, and also being crucified for the purpose of saving it simultaneously. The head of Christ is depicted at the top with his hands on either side, in the west and east direction and his feet, at the bottom, are at Gibraltar where the Mediterranean meets the Atlantic. While Jerusalem is located at the level of Christ's navel, Africa is in the bottom right, Asia in the upper half and Europe in the bottom left quadrant. The large map not only contains biblical references but also narratives from ancient scholars–writings of Mela, Pliny the Elder, and Alexander Romance, etc.; along with those that were his contemporaries. Christ is depicted as rising from the tomb. Other interesting vignettes to look for in the Map are– Gog and Magog shown as cannibals, country of Amazons that is guarded by two armed queens, flaming alters of Alexander, the stranded ark of Noah, and presence of elephant, leopard, monkeys, hyena in Africa.

ISLAMIC MAPS

Source: National Museum

With the fall of the Roman Empire European geographic knowledge was limited to treatises by the religious. Ptolemaic geography was lost. However, Islamic geography flourished contemporaneously as a Ptolemy's translated work was available and geographers were encouraged to write manuscripts describing travel to Asia and beyond. This is known through works by Al Idrisi, Ibn Batuta, Ibn Khaldun amongst others. Indeed, Islamic geography was influenced by different traditions of theoretical and empirical knowledge of cartography and not the Ptolemaic one alone. It was an outcome of the multifaceted and discontinuous foundations of the Arab world.

The Maps displayed in this panel belong to the Balkhi school of Geographers, Ibn Hawqal and Al-Istakhri. Both geographers based their work on Abu Zayd Ahmad ibn Sahl al- Balkhi (322/934). There is no concrete evidence that these maps were influenced by Ptolemaic geography, but there are elements of Medieval Mappaemundi in both. They clearly chalk boundaries, coastlines, lakes, rivers and mountains which constitute the backdrop on which the routes are marked.

Globe in Islamic World, Kitab al-Masalik wa I-Mamalik, Al-Istakhri, Iran, XIVth Century (late copy), Manuscript painted on paper, 22 × 31 cm, Source: Bibliothèque nationale de France

This is a stylised world map from a Persian translation Kitab al-Masalikwa-l-Mamalik or Book of Routes and Provinces by al-Istakhri written in Arabic in 10th century. al-Istakhri was a member of the so-called 'Balkhi school' of geographers based in Baghdad. Little is known about al-Istakhri, whose name suggests that he was from Istakhr in southern Iran.

World Map Based on Geography of Ptolemy Ibn Hawqal XE Century (copy of the 15th Century) Manuscript on paper, 35 x 26.5 cm Source: Bibliothèque nationale de France

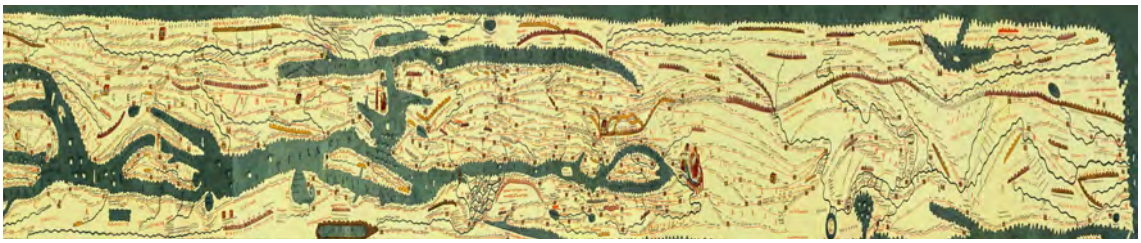
Mohamed Abul-Qasim Ibn Hawqal, lived in the middle of the tenth century. His work, KitabSurat al-Ard, 977 AD, is presented as continuation of al stakhri Treaty. His map, though clearly based on Ptolemy's Geography, faces the South. A strip of land seems to connect Africa and Asia with the Indian Ocean occupying an important place in the centre of the map.

MAPS OF THE ROMAN EMPIRE

The extent of the influence of the Greek and Roman civilizations has been far-reaching. While there are similarities in the two, there are differences as well which manifest in many ways. One way to note the differences is through the philosophy as manifested in the maps made by the two. The Greek, under the influence of Ptolemy and his predecessors, were very particular about mathematical geography while the Romans were, so to speak, more utilitarian in their approach to maps. Their maps took in cognizance the practical needs of provincial administration and military campaigns along with charting trade routes, establishing colonies, sub-dividing land, propaganda or more along the lines of panoptican. Very few documents and maps of the era have survived. Most have been either lost or destroyed.

One look at the Tabula Peutingeriana is sufficient to ensure that no attempt was made to show the whole world with any degree of exact proportions. It simply delineates roads in simple lines. The routes are drawn in red, sea in greenish-blue. Apart from the roads, it marks out granaries, ports and other important features like mountains, and rivers.

Tabula Peutingeriana (Peutinger Map) ,4th century AD
archment scroll; 0.34 m × 6.75 m; assembled from eleven sections.



This is an illustrated itinerarium (in effect, a road map) showing the cursus publicus, the road network in the Roman Empire. It was lst revised in the fourth or early fifth century. It covers Europe, North Africa and parts of Asia (the Middle East, Persia, and India). While no copies of the original map have survived, a monk at Colmar is said to have purportedly made a copy of it without eschewing details found in the original. The map is named after Konrad Peutinger, a German 15–16th-century humanist and antiquarian, a man to whom the map was left by Konrad Celts.

It is a schematic map: the land masses are distorted, especially in the east-west direction. It is a "compilation and a positioning of itineraries previously written in the form of catalogues". The map shows many Roman settlements, the roads connecting them, rivers, mountains, forests and seas. At the bottom right, it shows a "Temple to Augustus" at Muziris, one of the main ports for trade to the Roman Empire on the southwest coast of India. One can easily spot many familiar places- Rome, Constantinople, Antiochia, Nicomedia, to name a few. The last section on the right– Section 11– is of the Ganga River Basin, which shows Amu Darya, the Ganges, the Himalayas, the Hindu Kush, the Indus River and the Indian Ocean.

PTOLEMAIC MAPS

Ptolemy was a Greek astronomer and geographer working in Alexandria, circa 150 A.D. Frequently accorded the accolade the 'Father of Geography', Ptolemy's text dominated geographical study, in both the Christian and Moslem worlds, for over fifteen hundred years. His work is a summary and synthesis of Hellenistic, astronomical, astrological and geographical sciences. From this wealth of accumulated knowledge, Ptolemy wrote two important books, the 'Almagest', a manual on astronomy, and the 'Geographia', a summary of knowledge on geography and map-making. Even though Ptolemy drew from earlier writers like Strabo, his work was appreciated widely. In this text, he gave definition to chorography and geography. "It is the prerogative of Geography," he said, "to show the known habitable earth as a unit in itself, how it is situated and what is its nature; and it deals with those features likely to be mentioned in a general description of the earth, such as larger towns and great cities, the mountain ranges and the principle rivers." He opined that cartography's work was not artistic in nature but to study the relation between distance, direction, and the important features of the earth's surface, identifiable by plain lines and easy notations.

Continuation of some errors of Ptolemy's calculations in the works of future geographers and mapmakers for centuries is testament of the influence exerted by him. The most important of them was a miscalculation of the circumference of the earth. Ptolemy, himself, under-exaggerated the circumference of the earth by calculating each degree of longitude as 500 stadia instead of a more accurate 700 stadia. He, then, exaggerated the length of the Mediterranean by about 30%, and also that of Asia, thus greatly reducing the distance between the western tip of Spain, and the east coast of Asia. This had important consequences as Columbus, who owned copies of the 1478 edition of Ptolemy, believed, or pretended to believe, that only 750 leagues (probably about 2,400 nautical miles) separated Lisbon from Cathay. Had Columbus known that the true figure was nearer 10,000 nautical miles, it is conceivable he would never have set out on his first momentous voyage.

Ptolemy's work was lost to Europe after the fall of the Roman Empire and the earliest extant manuscript copy suggests that it was reintroduced around the 12th century. The re-discovery of Ptolemy's text and map during the Renaissance created great excitement, and a large number of manuscript and printed editions were undertaken. The maps were far in advance of anything most people had seen, with the exception of the manuscript charts - portolani - devoted to the Mediterranean World, being produced in the principal sea-ports of Italy and Spain. Yet, Ptolemy's maps depicted the World as it was known nearly fourteen hundred years earlier.

Though little is known about the man himself, Ptolemy's influence in various fields is of transcendent quality. His work, Geography was translated into Arabic in the 13th century. Largely ignored by the west until 15th century, it served as a handbook for laying down of maps by three different methods of projection. It set the coordinates for some eight thousand places and dealt with subjects such as latitude and longitude.

IBERNICVS
Albion insula
BRITANNICVS
GERMANICVS
CANTABRICVS
OCCIDENTALIS
Galliam
Balearium mare
AFFRICVM
ADRIATICVM
EGEVM
Pontus Euxinus
Palus meotis
HESPERIVS SINVS
LIBIA·INTERIOR
Longitudo eius 90000 stadia
ETHIOPIA·INTERIOR
TERRA·INCOGNITA
CIRCVLVS· CAPRICORNI
felix Arabia
RVBRVM MARE
SINVS BARBARICVS

Mappamundi in Rounded Form, The Geography of Ptolemy, Ulm, 1482, Watercolour wood engraving, Source: Bibliothèque nationale de France

MARVELS, LEGENDS, AND AGE OF DISCOVERY

One finds references of monstrous people living on the peripheries or the margin of the known world. This depiction was not new and can be traced further back in time to the ancient writings For example, Pliny, the Elder in the first century A.D. described the monstrous races in his *Natural History*, which reflects the increasing exposure of the Romans with the outside world and its imperial reach to lands in the east. In the text he describes rather fantastical races of humans living in India and Ethiopia. Pliny's account of monstrous humans continued to exert influence in the Middle Ages. The monstrous races came to be intertwined with the Christianity related discussions- were such races 'humans', since all humans were believed to have been descended from Adam? Could they, then, be saved through salvation?

The monstrous races, as mentioned earlier, continued to be part of mapping tradition. The purpose of medieval maps was largely exegetic, with symbolism and allegory playing major role in their conception. The idea of placing marvellous races, mythical creatures and legendary Kings on maps could have emerged from the earlier idea of Antipodes. The real reason may have been more prosaic. Europeans essentially knew coastal areas and interiors could not be left blank. Until more came to be known these areas were marked by fanciful

creations of the mapmakers. These maps are not devoid of accurate names of places seas, mountains and rivers, but the representation of the inhabitants of the lands, with little or no contact, are depicted as the 'other'. One explanation could be religious differentiation of the Church between the faithful and the Non-Christian. In the two maps displayed it is clear that India is a region of interest. The rhumb lines suggest the purpose of map was more than purely representational and served as a guide to navigation and direction on both sea and land.

Among the exhibits one easily notes the presence of these monstrous races. In the Psalter Map, a zone depicting monstrous races is noticeable along the southern coast of Africa. Dog-headed Folk; and people with their heads in rather bizarre positions are examples. In the Le Testu map, Pliny's influence is visible through the depiction of Sciapodae, whose single foot could provide shade from the sun and cynocephalus or dog-headed man.

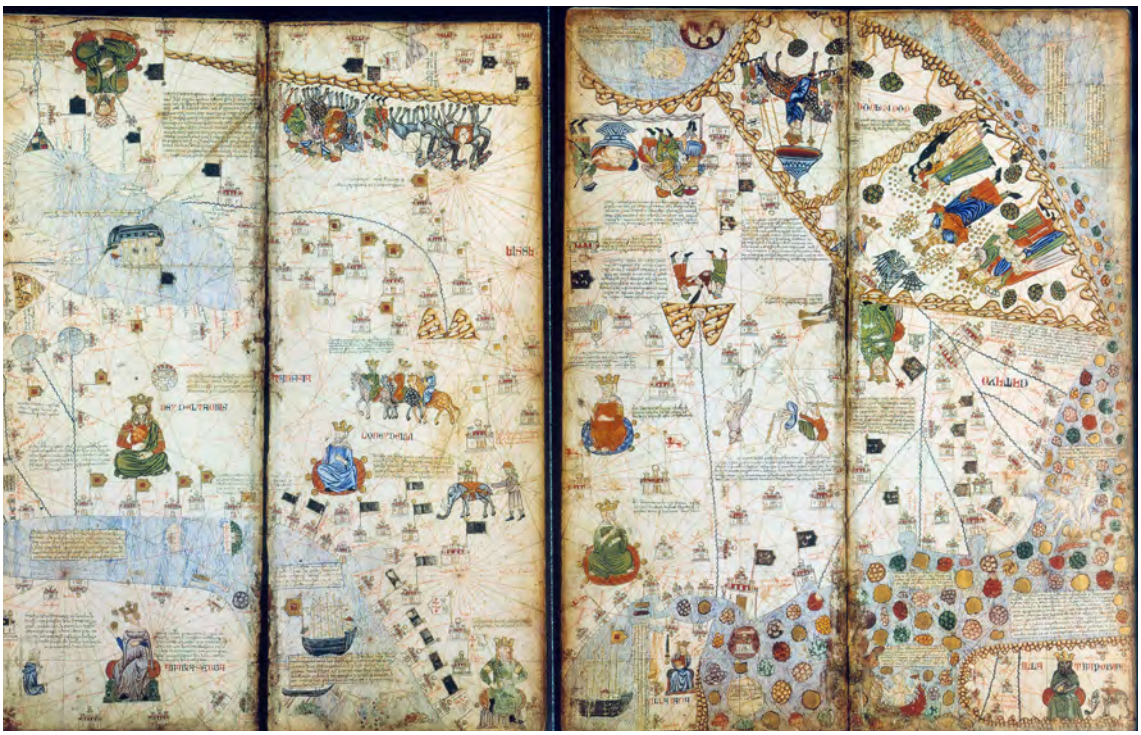
Atlas Catalan, Miller Atlas and The Indian Ocean from Le Testu's La *Cosmographie Universelle*, part of the Exhibition collection are very ornate and significant cartographic images. Dating from the fourteenth to sixteenth centuries, the three exhibits border on very important developments- the Age of Discovery, developments in navigation technology, to cite only two. The expanding knowledge of the world, culture, political competitiveness, and inroads made by trade are inscribed on the maps.

References:

Edson, Evelyn. The World Map, 1300-1492: The Persistence of Tradtion and Trnsformtion. Centre for American Places. John Hopkins University Press, 2007.

Harley, J. B. and David Woodward (ed.) The Histry of Cartography Volume I. Cartography in Prehistoric Ancient and Medieval Europe and the Mediterranean. Chicago and London:

The Catalan Atlas is believed to have been authored by Abraham Cresques of the Majorcan School of Cartography, which comprised mainly of Jews. The school and subsequently the Atlas are known for their brightly coloured illustrations of geographical features and portraits of foreign rulers. The Atlas is a world map built-up around a portolan chart, thus it combines medieval mappaemunidi with features of nautical charts, coastal details and loxodromes. The Atlas is read with the north on the bottom, which also impacts the



Atlas Catalan, Attributed to Abraham Cresques, 1375, Illuminated manuscript on parchment, 12 half sheets of 64 x 25 cm each, Source: Bibliothèque nationale de France

orientation of the maps- from left to right, from the Far East to the Atlantic. In the map on display on Asia, Cresques, attempted to include all that was known about Asia. Most of the details were taken from the narratives of Marco Polo and Sir John Mandeville. Asia begins to assume a form that is recognisable unlike in the medieval mappaemundi. The Atlas is replete with inscriptions that either portray points of economic benefit or which describe the characteristics of the inhabitants.

The Indian Ocean
in La Cosmographie Universelle
Guillaume Le Testu,1556
Manuscript on paper
Source: Bibliothèque nationale de France

A French privateer, explorer and navigator, Guillaume Le Testu, was one of the foremost cartographers of the 16th Century and author of Dieppe maps. He published La Cosmographie Universelle in 1555 or 1556 comprising 56 maps based, reportedly, on the charts that he himself is known to have drawn. The collection is a compilation of highly decorative regional maps, including that of India. His map of India gives a more triangular shape to western India, and Gujarat appears to be more north-west. What is noticeable is the continuation of the depiction of fabulous creatures of India- sciapodes and baboons. The Malay Peninsula, Sumatra and Java are more characterised in the East.

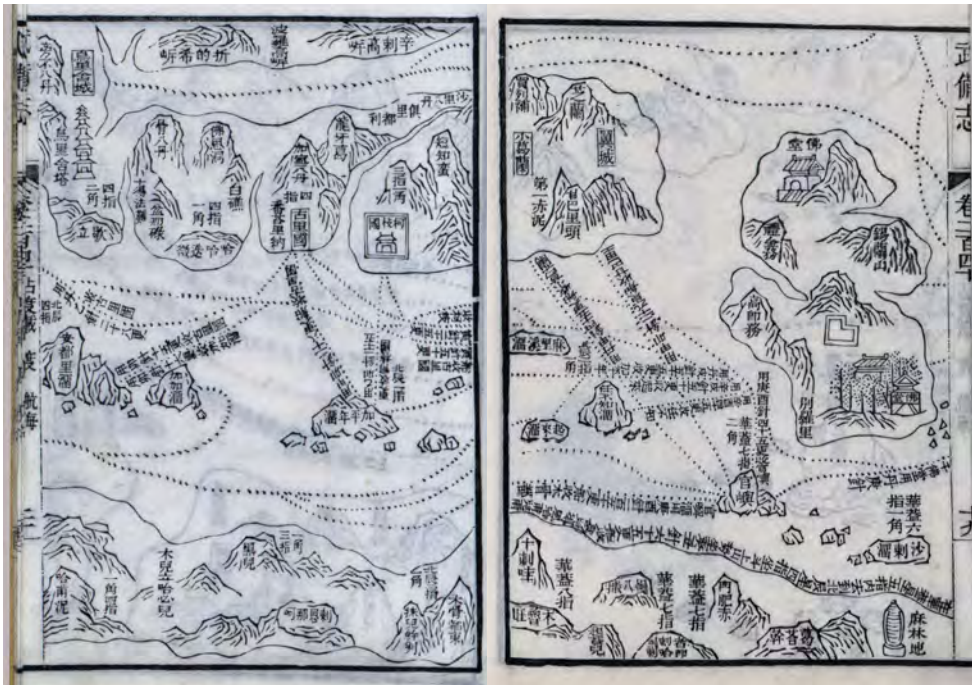
CHINESE MAPS

The 1413 expedition of Admiral Zheng He was the first Chinese voyage west of India, to Hormuz in the Persian Gulf. These and subsequent voyages were chronicled by a Muslim Chinese named Ma Huan, who was attached as a translator to the fleet. His notes on the ports visited on this and the three later expeditions were published in 1433, the year the final fleet returned, under the title The Overall Survey of the Ocean's Shore (Ying-yai Sheng-tan). Each ship had an official whose job it was to take compass readings, and Chinese navigators, corrected their compass readings by celestial observation, using the cross-staff or the kamal. They found their latitude from the stars using stellar charts. This methodology was common to the entire Indian Ocean region.

Speed was measured by dropping a floating object over the side and timing its passage along the length of the ship. Watches were timed by burning an incense stick of standard length. Charts were used, but surviving examples are schematic representations of coastal features as seen from offshore, located by elevation of the Pole Star.

Ma Huan's survey contains 20 chapters of varying lengths, each dedicated to a specific place, beginning in the east with Champa in Vietnam and ending in the west with "The Country of the Heavenly Square"—Makkah. Each entry concisely describes the political, military, religious and economic background of each port along with ethnographic material.

The memory of Zheng He's voyages lingered in Indian Ocean ports like Calicut and Malacca until the coming of the Portuguese in the early 16th century. Had the Ming maintained their naval presence in the Indian Ocean, the Portuguese would have been faced with a formidable rival. In fact, their withdrawal helped make it relatively easy for the Portuguese, who made up in armaments what they lacked in numbers, to impose their will on the monsoon ports.



Wu bei zhi / Mao Yuanyi zuan, not before 1644, Map of the expedition of Zheng He Wood Block Print, 1 atlas: maps- 30 x 19 cm, Scale not given., On Double Leaves, Oriental Style, Source: Library of Congress

The forty maps illustrating Zheng He's voyages were preserved by Ma Huan. They show the stars to steer along the Indian Ocean Coast upto Hormuz; besides uniquely arranging the East(Straits of Malacca) from where they entered the Indian Ocean, on top of the map, with North on the left.Zheng He crossed the Strait of Malacca between Malaysia and Indonesia, and sailed on to cross the Indian Ocean to Ceylon and India to further west to Persian Gulf, the Red Sea and the east coast of Africa. The notable features of this map are the use of easily identifiable cartographic symbols, for mountains, layout of islands, including landmarks, pagodas and houses. Of the 300 named places outside China, about 80% can be identified.

PORTOLAN CHARTS

It is difficult to ascertain the exact time for the development of Portolan charts but their importance in the history of navigation is undisputed. Beazley opined, "good maps were as valuable for true progress as good instruments ". The close of the thirteenth century marks a revolution in cartography. This is clear in the differences that one notices in the portolan charts and the medieval European mappaemundi. The mythico-theologicalness of the European mappaemundi stands in contrast with the Mediterranean 'Portolani' of which the earliest example can be traced to 1300, if not a little earlier, and continued until the sixteenth century. The word portolan is derived from portolani, which when translated in to English means "pilots" or "rutters". It is interesting to note that the portolan charts made their appearance at the same time as the Europeans started using the magnetic compass. While the medieval mappaemundi reflected the Biblical, rather theological, message, the lines of the portolan charts enabled the seafarers to travel back and forth from home to their destinations. The charts mark the beginning of the de-lineation of the world not based on theology or literature. As Tony Campbell, Map Librarian of the British Map Library puts forth, "...the portolan charts preserve the Mediterranean sailors firsthand experience of their own sea, as well as their expanding knowledge of the Atlantic Ocean".

The rhumb lines radiated from the centre in the direction of wind or compass points and were used by pilots to lay courses from one harbour to another. A navigator crossing the Mediterranean could find his place of origin and destination on the portolan chart, note the rhumb line whose angle corresponded to the angle of a line drawn between the two sites, determine the corresponding compass heading, and then sail by dead reckoning until he reached his destination. If the ship did not land on the targeted coast, the navigator could use an accompanying portolan to navigate coastwise. In Portolan charts, the longitude lines were drawn as straight, parallel lines without any compensatory adjustment in the spacing of latitude lines. This projection, and the accompanying system of navigating by dead reckoning along a compass was suitable for shorter distances such as that of the Mediterranean travel, where north-south distances are relatively small, currents and tides are minor, magnetic variation is insignificant, and storms are rare during the sailing season.

Some common features that are found on the portolan charts include a network of lines made within a circle, coastlines of lands, place names, scales of distance, a compass showing cardinal directions, and indications of shoals, reefs and islands along the coastlines . The necessity of these features in facilitating navigation is self-evident.

The 1492 Jorge de Aguiar chart, which is among the Exhibits, is the oldest known, signed and dated, chart of the Portuguese origin. Because of the practical value of the charts, especially as the Age of Discovery progressed, the states exercised various restrictions on their circulation, production and discussion.

While in accordance with the western scholarship, the portolan charts are considered to be path breaking and 'revolutionary', the Exhibition portrays existence of a similar tradition from the Indian Ocean Region – the pothis from Gujarat.

References:

1. Beazley, C. R., Chapter 1 in Dawn of Modern Cartography, Part III, 1260-1420

2. James Ford Bell Library, University of Minnesota: URL: http://www.bell.lib.umn.edu/index.html

A Map of the Mediterranean, parts of Europe and of Africa, 1492 Portolan Chart Jorge de Aguiar, 1030x770 mm

Source: The Beinecke Rare Book &Manuscript Library, Yale University, USA.

This is the oldest known, signed and dated navigators map of Portuguese origin. The title in Portuguese reads as "Jorge de Aguiar made me, Lisbon, in the year of our Lord Jesus Christ 1492". The date is worth noting. It is the same year in which Christopher Columbus departed from Spain for his mission to discover a westward route to China and India, a journey which, now, famously yielded interesting outcomes. Designed for seaborne navigators, the map contains details around the coast.

COSMOLOGICAL MAPS

Hindu cosmological speculations have attained their pinnacle in the Purãnas, which dwell on, among other things, the universe in space and time. The geography of the Purãnas is symbolic rather than representative. It is rule based, rather than imitative. It seeks to give order to the world and, far from reflecting reality, endeavours to create its own reality based on archetypal images and cosmic numbers. Mythical spatialization is not limited to perceptual experience of the environment; it goes far beyond it into the realm of speculation and fantasy. 'Geographers are now interested in how landscapes can be constituted by mythical, magical, and religious beliefs, and how they can be built according to aesthetic impulses' (Sack, 1989, p. 157).

Potentially, there are many ways of seeing the world. Mythologists see the world in their own ways. They constitute mythical landscape by mediating through their religious and mystical experiences. Like any other landscape, mythical landscape is an intellectual construct.

Hindu myth makers have transformed unknown physical phantasmagoria into a manageable, meaningful and largely symmetric cosmos. The resulting cosmos is an intricate world of human experience, imagination and fantasy put into one. As part of the esoteric understanding of the Universe, Hinduism defines existence as being comprised of three worlds. The image here is of the 'Bhuloka' which is one of the three worlds, the other two being, 'Antarloka'

and 'Bhramaloka'. The Bhuloka is a physical plane and is the world of gross or material substance in which the occurrences are perceived by the five senses. It is the least permanent of the 'Loka' and is subject to constant change.

Extending this intellectual tradition, the Jain understanding of the worlds is also divided according to dweeps. These worlds are part of the Adhai dweep meaning two and a half continents. The Jambu dweep- the realm of mortals - is common to Hinduism, Jainism and Buddhism. And forms the innermost concentric islands or continents.

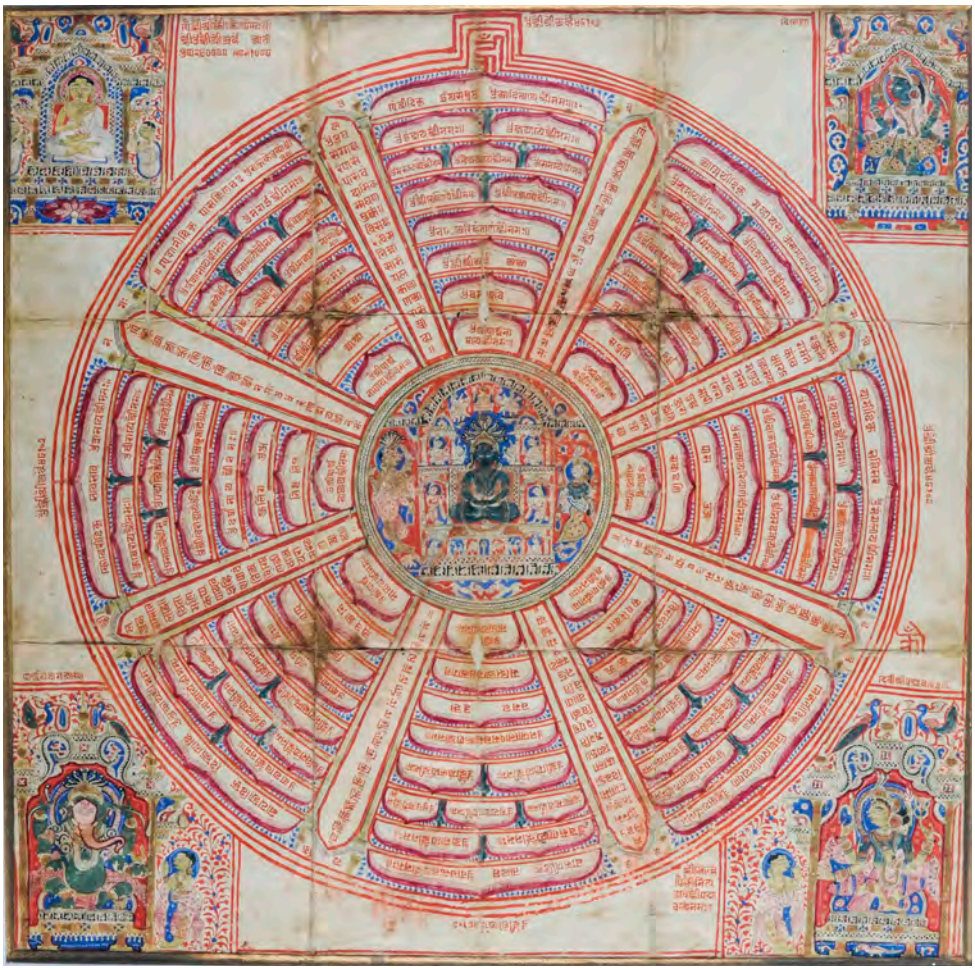
In Buddhist cosmology, in the Kāmadhātu (desire realm) is located Mount Sumeru which is said to be surrounded by four island-continents, the southernmost called Jambudvīpa. The other three continents of Buddhist accounts around Sumeru are not accessible to humans from Jambudvīpa.

References:

Saptadvīpā Vasumatī: the mythical geography of the Hindus, Jai Pal Singh and Mumtaz Khan: GeoJournal, Vol. 48, No. 4 (1999).

B. K. Chaturvedi (2004). Shiv Purana. Diamond Pocket Books. p. 124

Sack R.D., 1989: The nature in light of the present. In: Entrikin J.N. and Brunn S.D. (eds), Reflections on Richard Harts ho me' s the Nature of Geography. Association of American Geographers, Washington. p. 141-162.

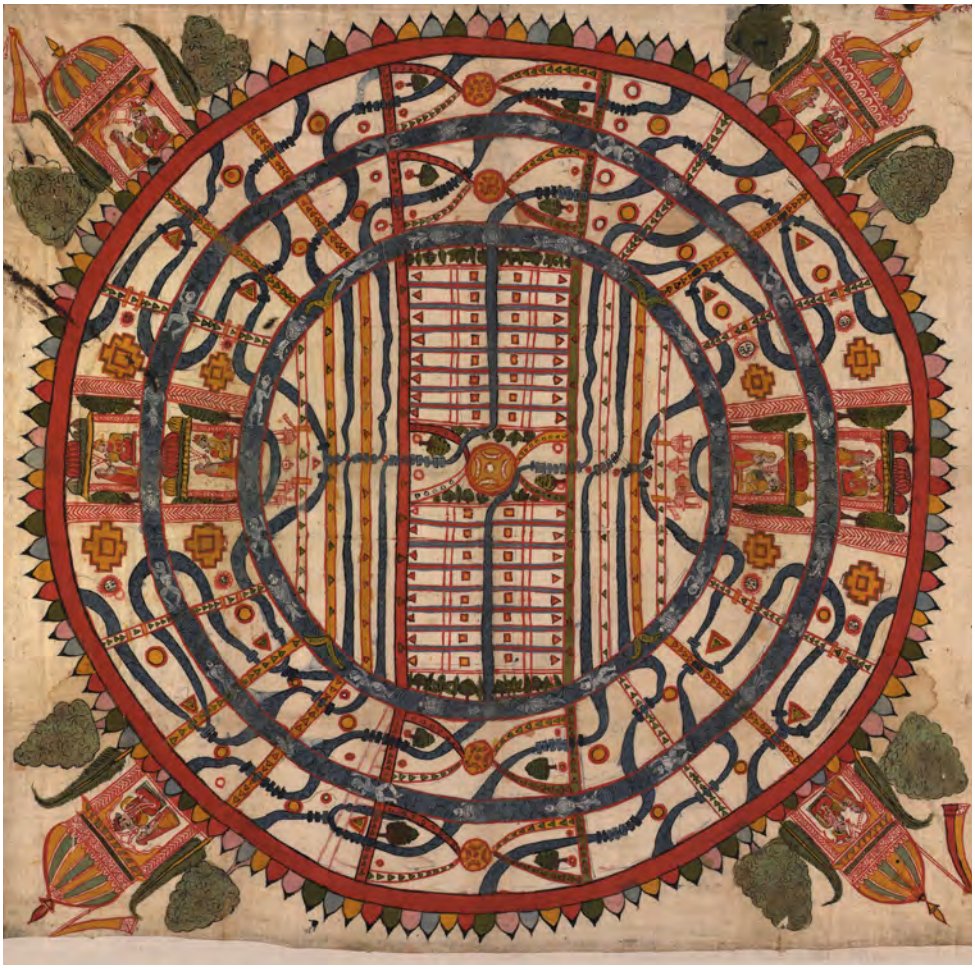


Jain Mandala, Acc. No. 79.210
Source: National Museum, Delhi

The Jain cosmological concept of the Universe with Jain Parshawanath as the presiding deity, Devi Padmavati, Viradha, Ganesha and Lord Mahavira on the four corners.

Bhuloka, Accession No.:SFP359
Source: Sarabhai Foundation

This is a depiction of the universe based on Srimadbhagwat, Vedic tradition. The Hindu epics encapsulate the spiritual and physical universes within the three worlds created by God. Bhuloka is the first of the three worlds, comprising of the Earth or the physical plane and the remaining visible universe. The other two worlds in subsequent order are Devaloka and Brahmaloka.



Manuşyaloka, date 189-. From Western Rajasthan, 14 x 27cm. Source: Library of Congress, Washington, D.C

Manuşyaloka is the map of the world of man according to Jain cosmological tradition. According to Denis Cosgrove, beyond the vivid colours, it has the "circular Jambudvipa at the centre, surrounded by the first (salt) sea ring and a further two continents that lie within the encircling mountain range, limiting the human world. At the corners are the four individuals who have achieved moksa." At the centre lies Mount Meru. Bharat us probably the crescent shape in the very lowest part of the central continent located between the two important rivers- Ganga and Yamuna.

TIBETAN BUDDHIST CARTOGRAPHY: WHERE THE COSMOLOGICAL MEETS THE PHYSICAL

Nilza Angmo
Associate Professor
Delhi University

Abhidharmakosa Mandala, Bhutanese Thangka, 19th Century,Trongsa Dzong, Bhutan.

Tibetan cartography has been extensively studied and analyzed by a great number of eminent scholars in recent times. This paper is dependent on earlier source materials but with an intention to share some thoughts on the subject in order to foster a more generic understanding of the Tibetan world of map-making.

Much of what falls under the large umbrella of Tibetan culture is highly religious in content and, therefore, forms the combined heritage and histories of diverse communities and multi-linguistic groups scattered across the Himalayan range who identify themselves as Tibetan Buddhists. Thus, it is the indigenous cartographic tradition of Tibetan Buddhism expressed through religious art, architecture, and narratives (oral/visual) that will be looked at in this paper.

1.1 Tibetan Buddhist Cosmography

Central to Buddhist philosophy, is the belief that humans are caught in a world of pain, suffering and impermanence, subjected to the cyclic chain of re-birth, where the path to liberation lies in an individual's aspiration to gradually evolve into a higher spiritual being by earning merit.

Mandalas are visual representations of such cosmic worlds and paradises that guide us through the metaphysical landscape of our soul's endless journey to its ultimate destination–enlightenment. Vasubandhu's Abhidharmakosa Bhasya written in fifth century is the source of most descriptions of the Buddhist Mahayana cosmography. These diagrams depict the universe, at the center of which is the sacred Mount Meru/Sumeru surrounded by seven mountains and oceans. In the four cardinal directions lie four oceans with four island-continents and semi-island-continents. Each of these oceans and continents is assigned a colour, red for Lupagpo (Purva Videha) in the East, white for Balangcho (Godaniya) in the West, yellow for Dramiyan (Uttarakuru) in the North and blue for Zambuling (Jambudvipa) in the South.

Zambuling or Jambudvipa is the land inhabited by humans. It is believed that the reason why one cannot see Mount Meru (center of the universe) on Zambuling is because the sky and ocean reflect the colour blue thereby hiding

the mythical mountain from our view

Similarities can be drawn between Hindu-Jain and Buddhist cosmological models, after all, all three of these religions have lived side by side for centuries. Places like Jambudvipa, Mount Meru, Indra loka, Uttarakuru are common to all three religions. Mount Meru is at the centre of madhyaloka or the middle world in Jain cosmology and is surrounded by Jambudvipa depicted as a circle. The Bhagavata Purana states that the universe is divided into spheres, the earth or bhu-mandal is made up of small islands one of which is the circular island continent of Jambudvipa with Mount Meru at its center.

The presence of a common understanding of the universe in these religions reflects that knowledge systems of ancient and medieval India were pluralistic in nature and could be interpreted in many ways.

1.2 Map of the Supine Demoness

Prior to Buddhism, Bon was the religion practiced by the people of Tibet. The belief in supernatural beings and black magic was central to this religion. It was during King Songtsen Gampo's reign that Buddhism was adopted as the new state religion. His marriage to two Buddhist princesses– Weng Chen Kongjo of China and Bhrikuti of Nepal– furthered the cause of Buddhism in this region.

The two princesses believed that monasteries and temples should be built for worship but each time a building was constructed, it was brought down by evil spirits. Princess Weng Chen, through the Chinese method of divination or geomancy saw that the Tibetan landscape resembled the body of a supine demoness. The decision was made to first pin the body of this demoness on specific points and subdue the landscape before the main temple could be built on her heart.

The capital of the kingdom was shifted from the earlier Yarlung to Ra-sa, where a lake called Wothang was pointed out as the location of the heart of

the demoness. Water was emptied out of this lake for the construction of the Jokhang temple in its place. The earlier name Ra-sa (place of goats) was changed to Lhasa (place of gods). It has been noted by many scholars that this act of subjugation is symbolic of the defeat of the anima loci or soul of the landscape (mother- nature, mother goddess) at the hands of an organized religion with its ancillary association with culture.

As far as the cartographic accuracy of this map is concerned, some of the temples can still be located on the actual landscape. This has been demonstrated on the image of the supine demoness in our Exhibition, Time, Space, Direction, by super-imposing a handmade outline of Tibet on to the image of the demoness. The temples of Katsel, Traduk, Khomting and Drumpa Gyang can be seen situated more or less at the location drawn on the demoness map

John C Huntington, History of Art 674- Art of Tibetan Buddhism Lecture 5, Songtsen-gampo and the Demoness (http://huntingtonarchive.osu.edu/resources/lectures/674/05.pdf) (hereafter John C Huntington)

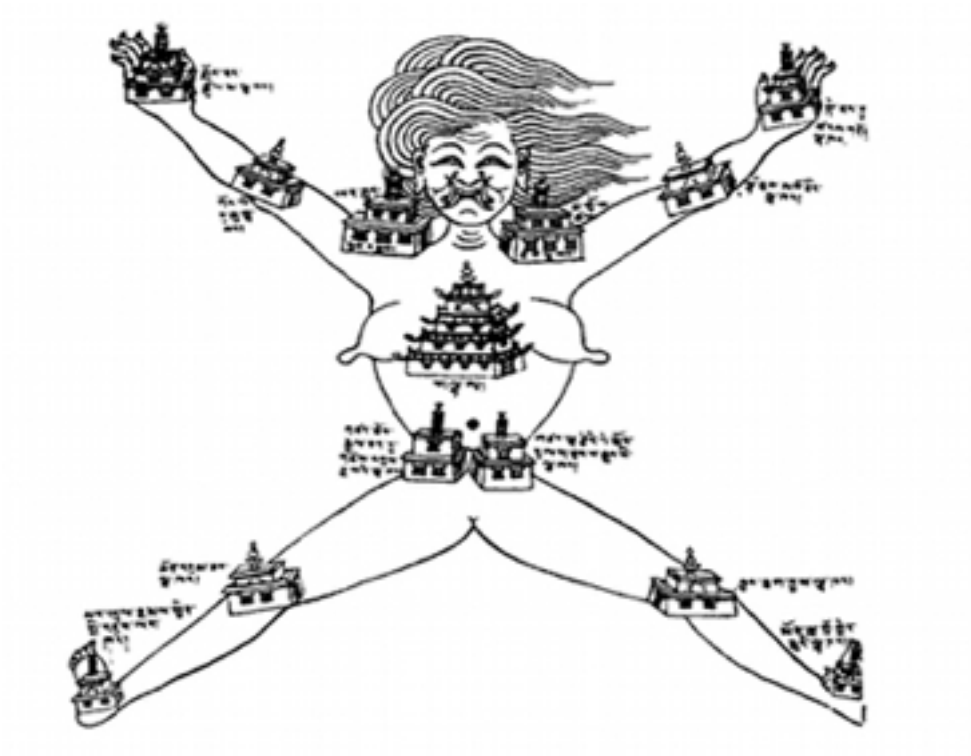


Diagram depicting the pinning of the demoness
Source: Digital Tibetan Buddhist Altar
(http://tibetanaltarblogspot.in/2011/02/tibetan-geomancy-part-three.html)

One of the reasons why this map is not very accurate may be because some diagrams of the demoness show her arms and legs stretched out, thus, leading to variations in the posture of the demoness. We can, therefore, infer that the lines drawn to connect each temple to form perfect squares can be taken to assume that the distance between each point would be the same on the actual landscape as well, but this is not so.

Although the image of the demoness does not exactly correspond to the geometric diagram, the shrines are geographically located in the right directions; thereby acting as a map that could be used to reach these destinations. Furthermore, some religious texts like A Guidebook to the hidden land of Pemako by Khamtrul Rinpoche narrate the myth of the demoness differently

Our legends tell us that Tibet, the Land of Snows is analogous to a supine ogress outstretched on her back. In the upper torso of hebody lay the heart of Ngari, and Tsang. In her lower torso are the legs of Do Kham, China and Mongolia. In her secret place is Er Lang Ri and her head arises as the immaculately pure glacial snows of Mount Kailash .

This description depicts the demoness lying on the opposite direction in Western Tibet where Mount Kailash is her head and moves towards East in the sequence of Ngari, Tsang, Kham, China and Mongolia which is also an accurate understanding of the geographical landscape. It is my belief that the multiple accounts of the supine demoness exists within the Tibetan Buddhist tradition and what they demonstrate is that, irrespective whether the demoness depicts the temples of king Songtsen Gampo or just the territories that were once a part of Tibet, the geographical location of atleast two such accounts are accurate

The Beyul of Pemako

The beyul (bas yul) tradition of Tibetan Buddhism dates back to the eighth century to Guru Padmasambhava (Guru Rinpoche) who hailed from the kingdom of Uddiyana and is said to have travelled the entire length of the Himalayan region contesting demons and evil spirits and converting them into protectors of the Buddhist faith.

Guru Padmasambhava is believed to have locked the entrances to various hidden valleys and sacred landscapes that would be unlocked by the spiritually worthy when the time was right. The keys or maps to such hidden paradises were then concealed by Guru Padmasambhava to be discovered by later generations. Sikkim (Demchog) is believed to be one such paradise but the beyul that has sparked much interest from scholars and devotees alike for centuries is Pemako. This beyul is believed to be located on the South-Eastern edge of Tibet extending into the Upper Tsiang region of Arunachal Pradesh, India.

Pemako in Tibetan means 'an array of lotus petals' alluding to the pure blossoming of spiritual bliss. Beyul texts or terma describe this land as being located on the body of the tantric Goddess Vajra Varahi or Dorjee Phagmo. The door or portal to this paradise is hidden somewhere within this landscape.

A physical map depicting the region of Pemako has not been found but an image similar to that of the sleeping demoness has been used by some pilgrims

and scholars to locate this beyul. Tertons (treasure or spiritual treasure seekers) rely on textual descriptions to travel through the body of Dojee Phagmo to find Pemako.

A concise guidebook written by Khamtrul Rinpoche, originally revealed by the Terton Orgyan Chogyur Lingpa, reads thus:

If one wishes to travel south to the hidden land of Pema-ko, one must continue for nine nights through the land of Badong in India. On route, we found the tributaries of the upper Tsangpo River flowing downstream and beheld a large boulder known as "honey rock". It was from here that we made our first entry into the Beyul, walking for 22 kilometers until we arrived at Pema Dzongchen .

'Badong' here may refer to a small village by the Yarlung-Tsangpo gorge in Tibet, China which may have been a part of India as the inhabitants of this village to this day are similar to the Adis of Arunachal Pradesh. Pema Dzongchen refers to a tiny retreat believed to be located at the neck of the goddess Dorjee Phagmo.

Many pilgrims have said to follow high lamas into this region in search of Pemako and some also narrate stories of people disappearing as well. During the Chinese invasion of 1959 many Tibetans fled to the upper regions of Arunachal Pradesh in search of the beyul of Pemako as it was predicted that the doors to such paradises would open during critical times.

The entrance to Pemako's spiritual paradise, however, may only be found by the worthy. What we have to keep in mind is that journeying to hidden sacred places is in itself a pilgrimage where the distinction between the real/unreal or physical/ metaphysical may overlap. After all, Pemako may just exist in the minds of the spiritual practitioners and the pilgrimage to such places only heightens one's spiritual progress.

The absence of physical maps depicting rivers, mountains, lakes or even kingdoms in the Tibetan Buddhist tradition may be mistaken for a lack of either geographical knowledge but as we have seen briefly, the case is otherwise. The sheer abundance of religious maps in the form of complex cosmographies and oral/textual narratives clears the fact that unlike other cartography traditions the focus of Tibetan Buddhist cartography seems to be the inner quest for the ultimate truth.

1.2 References

Baker, Ian, 2004, The Heart of the World: Journey to Tibet's Lost Paradise, Penguin.

Balicki, Anna, 2008, Lamas, Shamans and Ancestors: Village Religion in Sikkim, Leiden: Brill.

.Gyaltsen, Sonam, The Clear Mirror: A Traditional Account of Tibet's Golden Age, (trans) Taylor, McComas & Yuthok, Choedak Lama, 1996, New York: Snow Lion Publications.

Mills, Martin A., (December 2007) Re-Assessing the Supine Demoness: Royal Buddhist Geomancy in the Srong btsan sgam po Mythology , JIATS, no. 3, THL #T3108, 47 pp.

Schwartzberg , J.E. Maps of Greater Tibet, in Harley, J.B. and Woodward, David (eds.), 1994, Cartography in the Traditional East and South-East Asian Societies Vol 2. Book 2, Chicago & London: University of Chicago Press

1.3 Other Source Materials

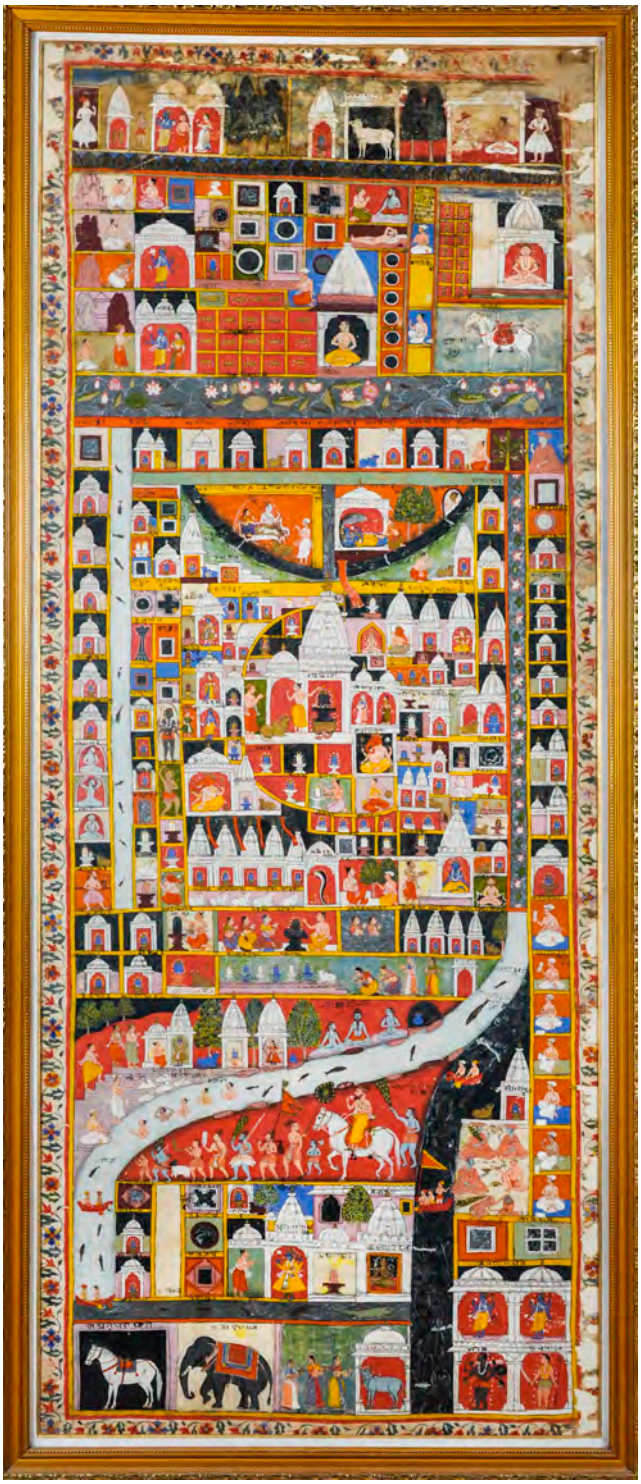
Norla, Orgyen. Guidebook to the hidden land of Pemako. Source: http://xccbopa.wordpress.com/2009/12/17/guidebook-to-the-hidden-land-of-pemako. accessed January-February 2014).

Berzin, Alexander. The Meaning and Use of a Mandala. Source: http://www.berzinarchives.com/web/en/archives/advanced/tantra/level1_getting_started/meaning_use_mandala.html (accessed January-February 2014).

PILGRIMAGE MAPS

Religion was central in European as well as South Asian depictions of geographies and space as shown in examples of the Mappaemundi and the Indian pilgrimage maps. Land routes were marked along cities, rivers and mountains. The South Asian pilgrimage maps include those of Hindu, Buddhist, Jain and Islamic origin. The Buddhist pilgrimage maps depict important monasteries as for example the Tibetan map, which illustrates important locations through the body of the Goddess Pemako. The Islamic pilgrimage maps show ports and ships along the coast leaving for Mecca. One argument about South Asian pilgrimage maps is that their purpose could have also been commemorative and the maps commissioned could translate as 'transporting' geography for those unable to travel. The physical characteristics of sacred Indian landscapes explain more than geographies alone. They situate a cultural experience which offers more meaning to spatial distributions of geography in terms of it being both a social reality and a myth

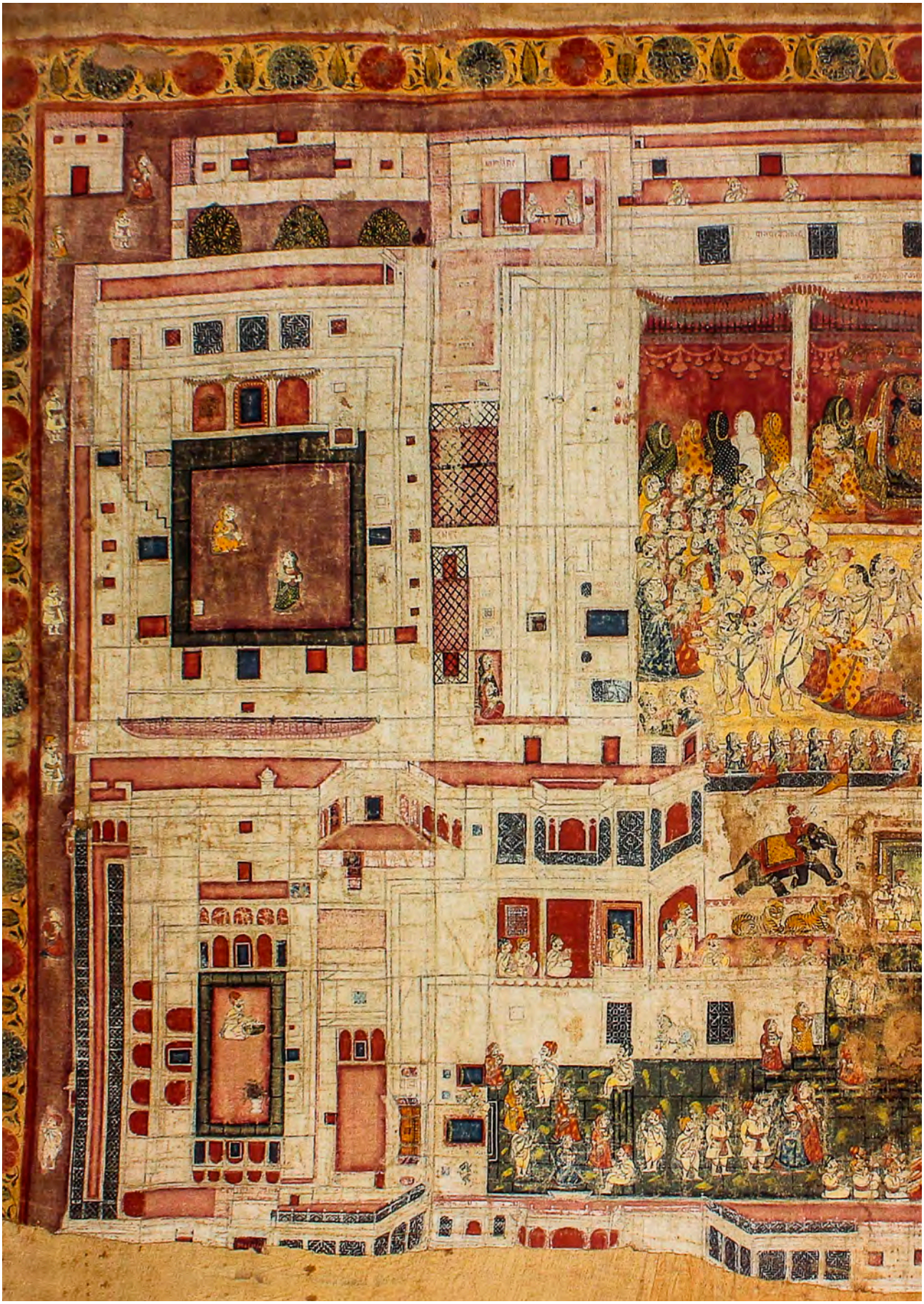
Sankodarbhed
(Pilgrimage Map)



Pilgrimage Pata, Mewar, Rajasthan, circa AD 1700., Cloth 178 x 70 cm. Accession No.: 36.59/28., Source: National Museum, Delhi

This famous Vishwanatha temple of Varanasi and its surrounding temples are painted on this Shaivite pilgrimage cloth pata. A close look at the pata reveals various components related with Shiva.

Accession No.: 1561, Source: Sarabhai Foundation



PichhavaiNathdwara, Rajasthan, early 19th Century, Pigments on cotton, Accession No.: SF 300.Source: Sarabhai Foundation

Pichhavai for the Nandamahotsava festival

INDIGENOUS MAPPING TRADITIONS: WARLI

The Warli tribe from areas around Dahanu, Palghar, Talasari districts at the borders of Maharashtra and Gujarat are legendary for their world view as depicted in monochrome paintings on the mud walls of their dwellings. When one looks at the paintings what strikes most is the depiction of nature and daily life. The other striking feature is the portrayal of geographic locations and seasons both of which are integral to the Warli people. Their depiction of space is not a formal one and hence cannot be taken as a constituent of modern mapping. However, at the metaphoric level they can be taken as Warli delineations of time and space. Their history and geography being oral are narrated in the form of stories and these are depicted in their art. One specific feature is the drawing of their village and its surroundings in different seasons. They understand time in relation to seasons and the activities in which they engage at the time. Their Monsoon paintings depict overflowing rivers along hills and ploughing and sowing. The winter paintings highlight harvesting and festivities along the river and hills. The annual pilgrimage shows people walking from their villages to the hill where the deity resides. Every painting includes portrayal of activities according to Time, Space and Direction, generally from the village in which the painter resides and/or to another location of importance.

A pilgrimage Map from a Warli village at Dahanu to "Muslia" hill, where their tribal deity resides.

A. *in image that depicts day will only incorporate the activities, animals and features that related with day-time.*

Warli Pilgrimage Paintings, 2014, By Rajesh Mor

B. *Same observations will be found for an image that depicts the nightime.*

This image maps the various activities and festivities that are connected with the marriage. This particular image maps the marriage of the artist.

A JOURNEY WITH MAPS AND PLANS[1]

Dr. Chandramani Singh
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It all started in 1964, when I formally joined Bharat Kala Bhavan, the museum of Banaras Hindu University at Varanasi. Our Director Rai Krishnadasji, who was known as 'Sarkarji' to all of us asked me to catalogue Pahari paintings in the collection. Though many of the Pahari master pieces from the collection were referred to and published by Dr. A.K. Coomaraswamy, W.G. Archer, Dr. M.S. Randhawa, Karl Khandalavala and Prof. B.N. Goswamy, some of the lesser known works were lying unnoticed. I started working on them and one day came across nine sheets, each measuring 66.5 × 52 cm. once formed a long scroll, but were disturbed, one of them was labelled as 'Wazir Zorawaro'. Place names on the route were also inscribed in Devanagari script. Those were the days when India-Pakistan war broke out and many of these names appeared in daily newspapers. I got interested in those sheets and to know more about 'Wazir Zorawaro', consulted books of history on Jammu and Kashmir and found that Zorawar Singh was Chief of the army of Maharaja Gulab Singh, who attacked on Tibet, in winter season. The weather was terribly bad, and entire army was frozen. To record this daring attack, this route map was prepared and preserved. Legends inform that peace loving Tibetans were so scared that they discovered the dead body of Zorawar Singh, took out his skull andplaced in a monastery at Lhasa. At that time, I wrote an article in Hindi on this scroll which was published in a Hindi weekly Dharmayuga, Mumbai (then Bombay), and was later included in my book on Pahari painting.[2]

In 1973, I joined Maharaja Sawai Man Singh II Museum, City Palace, Jaipur, where my first assignment was to register the unaccessioned objects. To understand the collection, I was going through the old records of Pothikhana and Suratkhana, there I came across a genre mentioned as tarah – a word

unknown to me until then. At that time a retired musharaf (clerk) of Kapad dwara store was working at the City Palace, I consulted him, we had a long discussion and he explained that the word stands for a plan or map in this context. The catalogue of Khasmohar (personal) collection was under print so the maps plans and similar material were included in that volume.

Then came year 1982, when the festival of India was organised in London. I was asked to present a paper in a seminar at the Victoria and Albert Museum. Searching a new interesting subject, I decided to write on 'Painted City Maps', visited Bikaner, to consult Rajasthan States Archives and prepared a paper for the seminar.

At London, I thought to look for similar maps in the British Museum and Library, went there, consulted the catalogue and found Accession numbers of maps of Agra, Delhi and Kashmir, but it was disappointing when I asked the lady in charge of the Map section, she replied that Indians never made any map, and the section does not have any. I presented the catalogue numbers, yet she could not find maps of Agra and Delhi, but two maps of Kashmir were in the store, for which she promised to send slides on payment. She also discussed about my paper, came for the presentation at Victoria and Albert Museum. She congratulated me for showing maps, unknown so far.[4]

Prof. Attilio Petruccioli, Professor of Landscape Architecture, Faculty of Architecture, Polytechnical University of Bari, Italy asked me to write an article for his journal, which was well received.

Mid 1980's brought another surprise. Pt. Gopal Narayanji Bahura and I had been cataloguing personal documents of the Jaipur Royal family, preserved in the Kapad-dwara store. When one lot was to be completed, a number of bundles wrapped in coarse cotton fabric were found. Maharaja Sahib asked us to plan second volume as the first had become heavy. It was completed in 1989 and sent to the press for printing.[5]

The Second Phase – For the next two decades, I did not write on maps, though spoke on them time to time. The Year 2014 again provided me an opportunity to work on maps from the City Palace collection, a detailed study of selected maps from the Pothikhana collection at the City Palace. This is the first in

series here, and in them the approach is historical, supported by documents. Another interest is to show use of spaces regarding water management for which sites of different nature have been selected. For example, the kunj (mansion) at Vrindavan is situated on the bank of river Yamuna while Jaigarh fort and town of Sawai Madhopur are amidst hills.

Plan of a kunj at Vrindavan (Acc. no. 17)

Presently known as 'Sawai Jai Singh Ghera', the complex would have been used as residence of S. Jai Singh (1699-1743) at Vrindavan, during his tenure at Mathura as Fauzdar, and Vrindavan was in his Jagir between 1723-25. Here some documents related with the property from the City Palace collection will also be discussed. The earliest dated document is Document No. 246, copy of a sale-deed in Persian (Shikastah) mentions purchase of agricultural land measuring 12 biswas situated in Mominabad alias Vrindavan for Rs. 20 Shahjahani to the Maharaja. Bears a seal of Qazi Ghulam Muhammad, note written on the back in Nagari letters reads, (बाग वीदरावन)

The deal was executed between Fatima Khanum, daughter of Mir Muhammad Saleh, son of Muhammad Husain and wife of Haji Muhammad Kasim to Panna Nazir, an employee of Maharaja Bishan Singh. 1 Rajab San. 1106 AH (February 5, 1695).[6]

No. 212, dated January 6, 1725[7]

For about thirty years, we do not hear about Kunj at Vrindavan, possibly after death of his father S. Jai Singh remained occupied in Deccan, then with death of the Mughal Emperor Aurangzeb, the war of succession and unstable situation in Delhi. After consolidating his position at Amber, he remembered his fathers property during his posting at Mathura and more so when he received Vrindavan in Jagir between 1723-25. We come across a copy of a sale-deed written in Persian and Devanagri scripts. The deed was executed by one Laldas, son of Mathuradas, son of Naraindas and Bulakidas and Keshavadas, sons of Manulal, son of Mathuradas, jewellers, caste Gujarati Bania in the

name of Maharaja Sawai Jai Singh, it is about purchase of a kunj, dewan khana and a ghat at Vrindavan for Rs. 6050/- only. The document bears seal of Aziz-ud-din Muhammad.

There are three more sale deeds :

No. 219[8] is regarding sale of a kunj built with bricks and stone, having a wooden roof in Mominabad (Vrindavan) near the ghat, in pargana Islamabad alias Mathura for Rs. 1500/-. The document bears a seal of Qazi Muhammad Iftikhar-ud-din 1132 AH. The deed was executed between Santokhrai s/o Mrs. Indu daughter of Jaindas, son of Bilawaldas etc. to Vakil of Maharaja in the name of Kriparam, son of Shivadas, son of Dharimal Vakil of Sawai Jai Singh. 4th Jamadi-us-sani, 10th regnal year of Muhammad Shah 1140 AH (January 6, 1728).

No. 220[9] also a sale deed was executed on 29th Shawwal, 13th regnal year of Muhammad Shah, 1143 AH (April 26, 1731), between Charandas, son of Manjidas and Kriparam, Vakil of M.S. Jai Singh. It is for purchase of a one storeyed kunj with material-bricks, wood and stones, measuring 1554 sq. yds. located at Vrindavan for Rs. 2871/-. The document bears a seal of Iftikhar-ud-din. The receipt of Charandas is also enclosed with it (No. 221).

The next sale deed **No. 1476**[10], dated June 5, 1729 was executed by Chetandas and Sewadas Vairagis for the plot of land measuring 31 × 23 yds. situated at Vrindavan in favour of the Maharaja of Jaipur.

Finally, the kunj was constructed. A trusted servant of S. Jai Singh, Pir Ghulam Panna, presented this kunj to the Maharaja (**Acc. no. 853**)[11]. In addition, he also presented a plot of land, purchased by him near Vaikuntha ghat, for which

a grant deed attested by the Qazi was also sent through Raghavadas, who was asked to explain the details about (purchase) verbally.

A close study of the kunj, at present a property in the possession of Radha Ramanji temple indicate that the plan was followed in verbatum except minor changes for example instead of six blocks there are seven and the seventh in centre has an image of Nritya Gopalji; three ghats shown in the foreground on the river Yamuna are there, known as Bhramar ghat, Radha ghat (Zanana ghat) and Chaitanya ghat. Details shown in the map were, probably not constructed. The entrance is on same side as indicated in the map.[12]

Jaigarh Fort:

To study the water management system at hill forts, Jaigarh is the best example for two reasons – the system was updated and improved time to time and it had been well maintained all these years. Perched on a rugged range and virtually unapproachable Jaigarh is one of the greatest achievements of the Kachhawaha clan.

The earliest reference regarding the spot where the fort is built is available in Plan Nos. 59, 60, 61 and 62 preserved in the pothikhana, Maharaja Sawai Man Singh II Museum, City Palace, where it is called "chilh ka tola" (चील्ह का टोला) (Map in pg).

Legends inform us that Maharaja Man Singh I (1589-1614) had chosen this spot for storing his wealth which was accumulated from the twenty-two and half parganas which he held under his charge for about twenty years. This fact is also supported by a 19th century copy (Coll. Th. Mohan Singh of Kanota, Jaipur) of an old document.

The architectural details, floral patterns and the araisha plaster in some of the earlier apartments and also the style of naming the apartments speak of the construction during the time of Mirza Raja Jai Singh whose grandson Maharaja Kumar Kishan Singh (17th century) also laid out a garden and constructed a tank known as Kishan Bagh and Kishan Kund in the vicinity.

It is authentically known the Sawai Jai Singh remodelled and expanded the residential parts of the fort for his own family and the establishment. Some plans of Zanana palace and other parts, prepared during his time are also preserved in the Pothikhana collection. He awarded Vidyadhar the architect incharge, siropao (ceremonial dress)and other gifts on the completion of the

construction at Jaigarh in V.S. 1783 (A.D. 1726). Ishvar vilasa Mahakavya, a work composed during the first year of Sawai Ishvari Singh's reign, confirms that Sawai Jai Singh made Jaigarh more unapproachable (दुर्गम), founded Jaipur City and constructed Jai Sagar.

एत्पदार्थत्रितयं जयांक श्रीमत्सवाई जयसिंह नाम्ना।

कृतं तदारभ्य "जयः" कुलेऽस्मिन् सुनिश्चितोऽभूत् त्रितयेन वाचाम्।।49।।

The poet who wrote the Ishvar Vilasa had been a court poet of Sawai Jai Singh and was an eye witness to the activity. Sawai Jai Singh christened the Jaigarh Fort, Jaipur City and the Jai Sagar (Talkatora Tank) after his own name and thus thrice confirmed victory (t;) of his family. The same fact is corroborated in a Kavitta composed by Puran Kapadi, another court-poet of Sawai Jai Singh.

अंबावती हू ते अधिकाई पब्बै उपरि सवाई।

जयगढ़ मधि कीने महल नवीनै इं।

Sawai (Jai Singh) built these new palaces in the Jaigarh which was situated on the hill above Amber.

An example may be cited here, a multicoloured map, painted on hand-made Sanganeri paper and pasted on coarse white cotton fabric, (Ca. 1710, Amber) shows Jaigarh - then popularly, known as Chilh ka tola – place of eagles and its surrounding hills. Though not dated, it would have been prepared before the palace and garden complex was constructed as it shows only the central part of the fort and the old approach road from Amber with Tripolia (trefoil) gate.

Inscriptions written in Nagari characters on the plan suggest that it was prepared for constructing two more water tanks, one inscription indicates place for the new tank and the second recommends the space for availability of water in plenty.

Rest of the inscriptions read names of places – site of Mansa Devi, a well near Kadamb trees, place of (ashram) Khakhiji – a saint and the path leading to Kishan Bagh. This garden was planted by M.K. Kishan Singh son of Maharaja Ram Singh-I (1667-1689)

Sawai Madhopur :

Cat. No. 96 illustrates 'Bhairon Darra' at Sawai Madhopur.[13](Map in pg) The town was founded by M.S. Madho Singh (1750-1767) son of Sawai Jai Singh in 1763. The city wall shows that the plan was made after the main door of the town was already completed and people have started living in. It would be interesting to know why did the Maharaja decided to have a township near the strong fort Ranthambhor, for which, one has to go to the mid 18th C. history at Mughal court and the situation of Jaipur. Weak Mughal Emperor Ahmad Shah (1748-1754) ruling at Delhi was surrounded by court intrigues among his domineering ministers and Jat Chief of Bharatpur region.

The Emperor thought to take help from his old ally Jaipur who had his own problems from Maratha side. But S. Madho Singh decided to help the Emperor. Sir Jadunath Sarkar writes. "The Rajah left Jaipur with a large army, on the way took bonds from the Zamindars of Rewari for four lakhs as subsistence money for his troops, and arriving at Delhi interviewed the Emperor during a ride on 15th October, 1753. On the 18th he and his officers were formally presented to the Emperor in the Diwan-i-Khas of Delhi fort, the Emperor advancing on foot to the door of the hall to welcome him. He made the customary presents to his sovereign and received official condolences for the death of his elder brother (three years before), investiture by the Emperor and the highest insignia of rank, namely a palaki with fringed cover, and the Mahi Maratib standards. At a business meeting five days later, the Emperor appealed to the Rajah, 'In view of the loyal services of your fore-fathers, it is the duty of an old hereditary servant like you to save the Empire in such a crisis, otherwise, nothing but the dust would remain on earth as its name and mark".

Determined to help the Emperor, Madho Singh set himself to establish peace at the Mughal Court. He talked with the Jat Chief Surajmal and asked him to retire from this fight against the Emperor to which Surajmal agreed with a condition that his territory will be recognized. The second problem was solved by withdrawal of Safdar Jang to his own province Awadh.

After settling problem at the Mughal Court, the Maharaja was rewarded by the Emperor – by granting the fort and district of Ranthambhor on December 19, 1754. On return from Delhi the Maharaja called the Qiledar Barkat Ali Khan who apprised him (the Maharaja) the situation at the fort and appealed him to take the necessary action immediately. So, the first thing the Maharaja did was paying salary to the garrison from Jaipur treasury and took charge of the

fort, appointed seven Qiledars and the place was put in their joint charge. The previous Qiledar Barkat Ali Khan was granted a jagir which was enjoyed by his descendants until the merger of the State in Indian Union.

The Maharaja knew that the fort was a military base and in order to protect it he should be developing the surrounding villages. He decided to have a township after his name, thus Sawai Madhopur was founded. In those days excess rain created difficulties for the local residents, hence this project was prepared.

Above mentioned maps are only a few examples related with water projects, there are many more in the collection of Pothikhana and should be studied by historians, geographers and architects.

References:

1 I am grateful to Prof. Irfan Habib who very kindly supported my project on mapds and plans.

2 Chandramani Singh, Centres of Pahari Painting, Abhinav Publications, New Delhi, 1982, p 114.

3 Gopal Narayan Bahura, Literary Heritage of the Rulers of Amber and Jaipur, MS Man Singh II Museum, City Palace, Jaipur, 1975 p 161-162.

See also, Susan Gole, Indian Maps and Plans, Manohar, New Delhi 1989.

4 Chandramani Singh, Early 18th century painted City Maps on cloth in R.Skelton et al, Facets of Indian Art, 1986, V&A Museum, London.

5 Gopal Narayan Bahura and Chandramani Singh, Catalogue of Historical Documents in Kapad-Dwara Jaipur Maps and Plans, Jaipur, 1989.

6 Ibid.

7 Ibid.

8 Ibid.

9 Ibid.

10 Ibid.

11 Ibid.

12 I am grateful to Sri Sri Vatsa Goswamiji who very kindly discussed the map with me.

13 Susan Gole, Indian Maps and Plans, Manohar, New Delhi 1989. p 205.

THE CITY MAPS

The five city maps in the Exhibition are from the Maharaja Sawai Man Singh II Museum, Jaipur. They are from the 17th and 18th centuries. The style of the maps and the use of colours indicate blending of the Rajput and Mughal traditions. The maps were not made by professional cartographers but by painters. It is very difficult to construct the evolution of Indian City Maps and Town Plans or an indigenous style. The maps vary in terms of style, scale, technique, purpose, material, and colour scheme, etc. While it is not possible to ascertain the exact date of the maps in the Exhibition, a tentative dynastical chronology can be worked out based on the process of elimination of presence or absence of buildings and the changes in the landscape. The Maps in the Exhibition are primarily plans meant for construction of towns and Tarah Bahirondara Sawai Madhopur, which depicts a project to divert excess water caused by flooding into a canal.

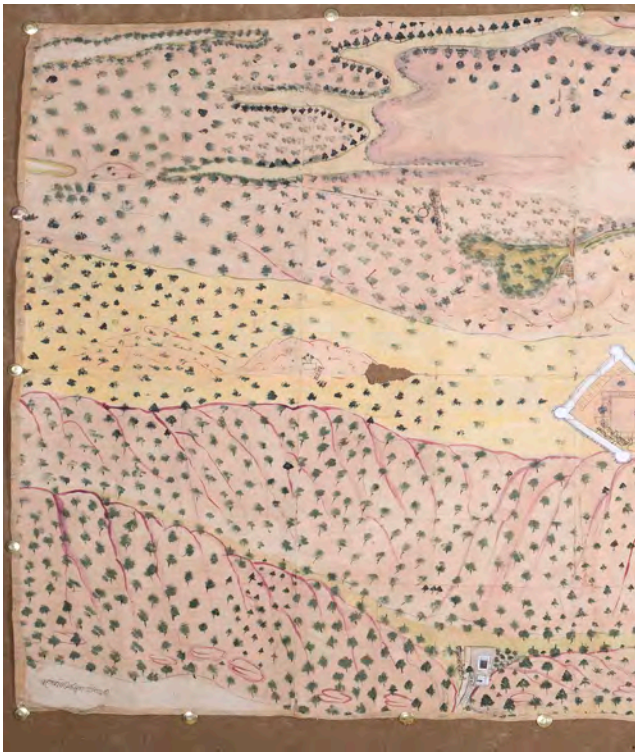
The sixth map is a map of Jammu city from the National Museum.

Tarah Sanaganer mein Garh Banavana Ki, c. 18th Century, Painter Unknown, 40.7 x 46 cm, Source: Maharaja Sawai Singh II Museum, Jaipur

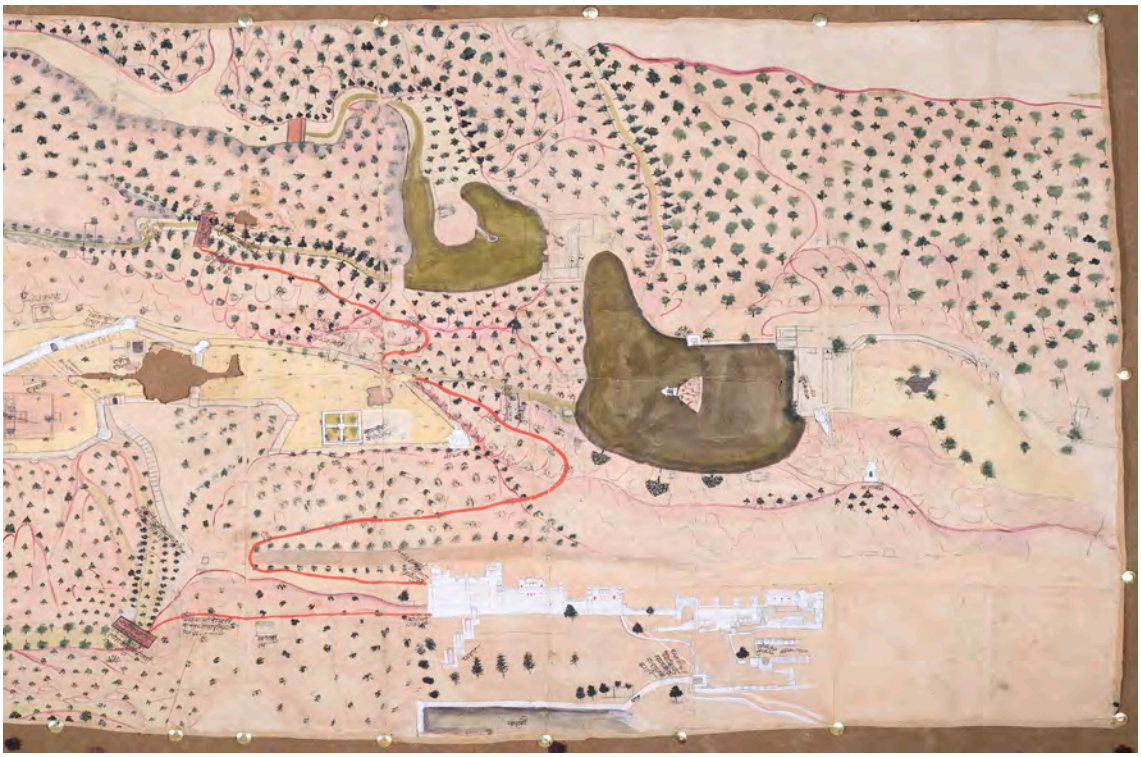
This is a very colourful map of a fort being built in Sanganer. The city was built by Maharaja Prithvi Singh (1767-1778) and takes its name from Sanga Babaji, the third son of Prithi Singh. The map probably dates from the same period. The plan shows a circular fortification with bastions on which canons have been placed. The double walls of the fort and a moat for further protection are also shown.

Tarab Bahirondara Sawai Madhopur, Painter Unknown, 90.5 × 129 cm, Source: Maharaja Sawai Singh II Museum, Jaipur

Sawai Madhopur was built by Madho Singh I in 1763 is about 120 km south-east of Jaipur. This map shows the plan to divert the flood waters through a canal to collect the excess waters in order to avert flooding of the town during Monsoon. The map is brightly painted, and it seems characteristic of the maps and plans made for Madho Singh. The canons placed within the fortifications of the town have been marked. The royal Panchrang flag is also shown and probably points to the royal presence in the town.



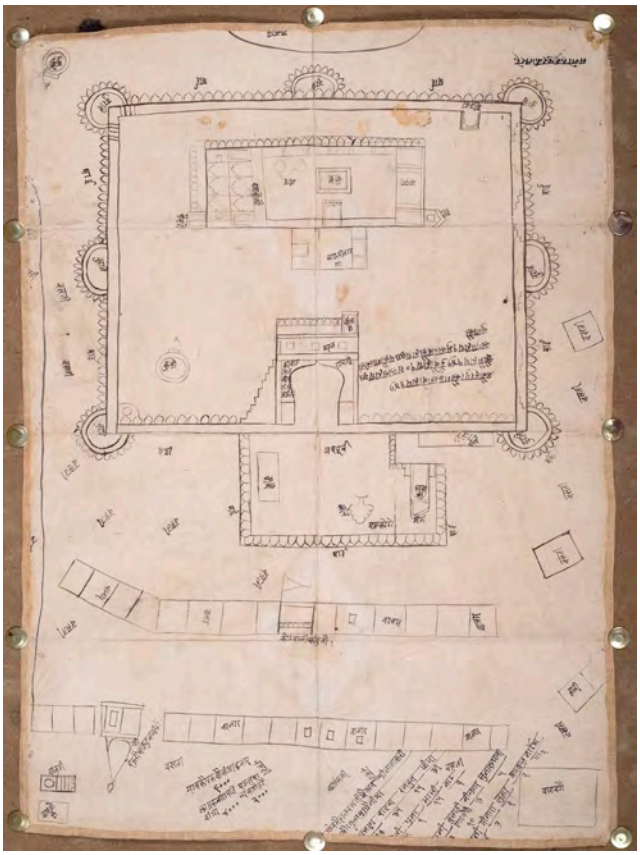
This map was probably made in the 17th century. The constructions, made at the time of Sawai Jai Singh, are not seen. The style of the map, i.e. the colours used and the way trees have been rendered, point to a period subsequent to the reign of Man Singh I (1589-1614) but prior to that of Sawai Jai Singh (1699 - 1743). At two places, marked in brown rectangular block, clear instructions are given as to the construction of a dam. Some of the features may still be viewed.



Tarab Chil Ka Tola, c. 17th Century, Painter Unknown, Source: Maharaja Sawai Singh II Museum, Jaipur

Tarah Borada ki, Painter Unknown, 61.5 x 82 cm, Source: Maharaja Sawai Singh II Museum, Jaipur

Borada is a small town ahead of Sanganer. The map shows the plan of the fort and the town. At two places in the map the Pachranga has been shown. These places were probably inhabited by prominent people



Tarah Manoharpur ki, c. 17th Century, Painter Unknown, 44 x 63.4 cm, Source: Maharaja Sawai Singh II Museum, Jaipur

Tarah Manoharpur ki is contemporary map of Shahpura. Founder of the Thikana of Manoharpur, Rao Manohar was granted a mansab in 1616. The map appears to be both, a survey and town plan of Manoharpur. In one corner of the plan, a survey based on caste is mentioned along with the numbers, occupation, and the land area. A fortified structure is shown in the middle surrounded by a moat or khai. The fort is approached by a huge gateway, which according to the inscription is made of wood covered with iron. An inscription within the fort reads, Manoharpur ka Gadh or the Fort of Manoharpur, and its measurements in gaz are given. Within the fort is a smaller structure, the chabutra with a pillared-pavilion to its side called the das chowk. The trees are identified as neem. Behind the fort is a pond or talaab. The fort is preceded by two rows of shops and is labelled as bazaar. A temple of chatrbhujji is also marked. Two gardens and a baoli or stepwell are also marked. The kotwali, which stands outside the fortified structure and surrounded by the basti, has been labelled and shown with a flag marking it as a seat of power and government. More work is needed to determine which ruler was associated with Manoharpur and its construction.

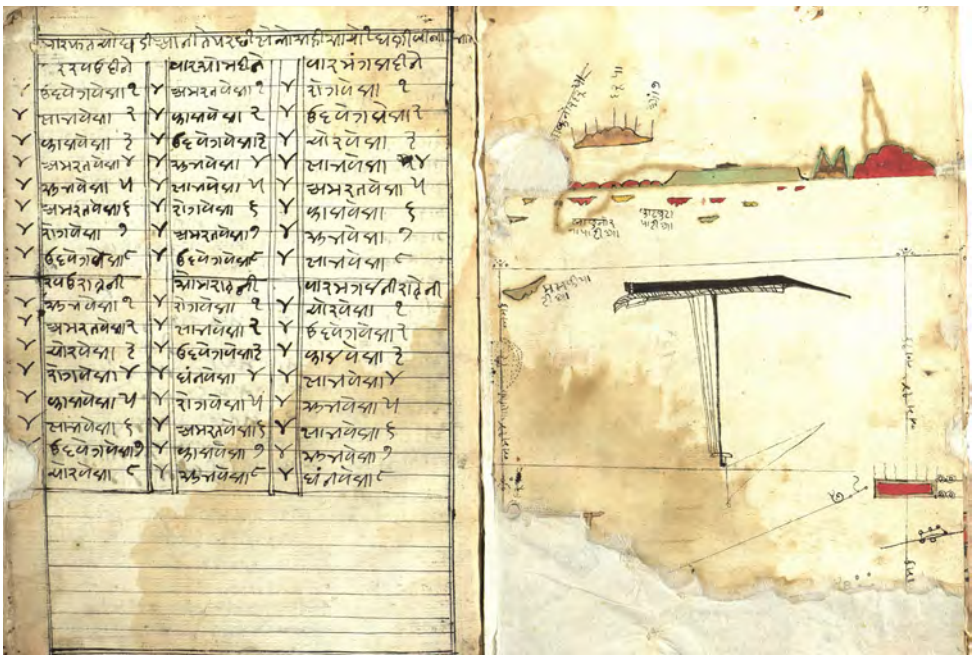
This map is an excellent portrayal of Jammu City and significant locations within it. It's different from other medieval maps which concentrate on showing a single aspect. This map portrays an overall character of the land, its history, structure

The Map of Jammu City, Company Period, Punjab, circa AD 1880-90. Cloth pasted on paper, 128 x 208 cm. Acc. No. 58.344. Source: National Museum

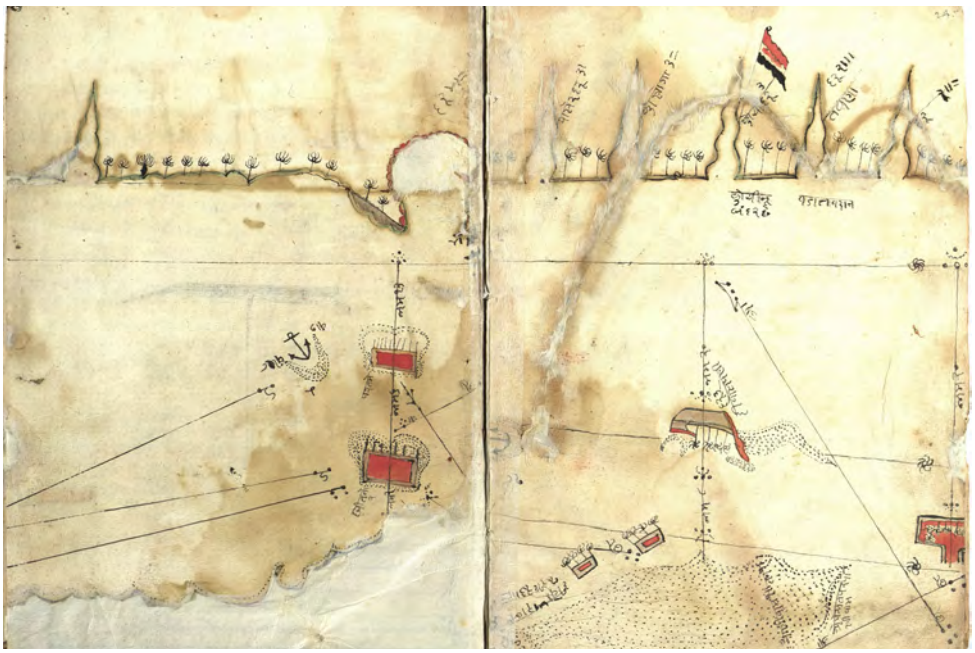
of society, religious thrust, economic and political setup,strategic positions, important personalities and civil amenities. In this sense and in its visual thrust this map, apart from geographical data, is also an excellent painting.

POTHIS

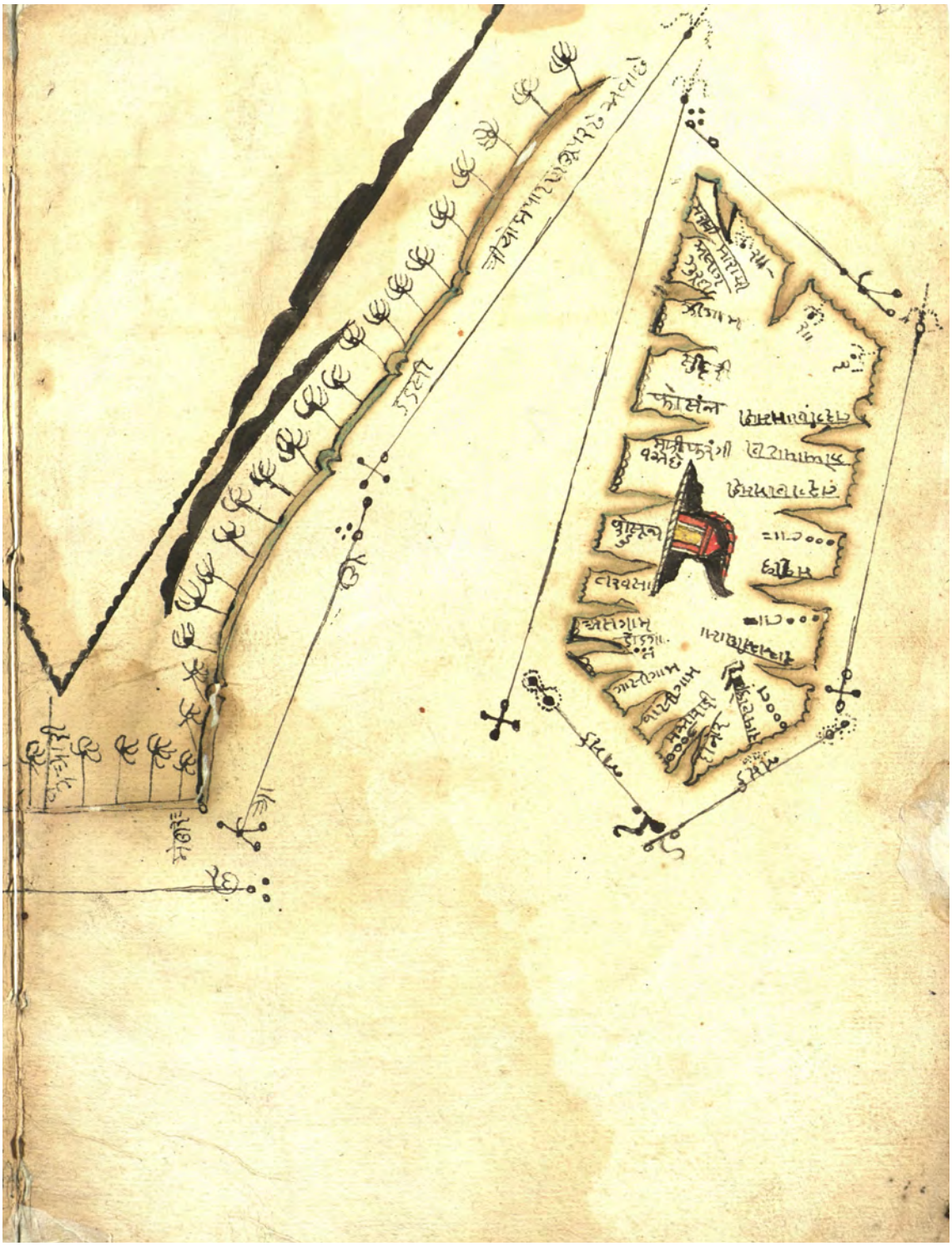
Pothi is the term used to describe Log Books used by malim, Gujarati navigators, to chart their way to reach destinations in voyages. It is important to note that the lunar calendar was adopted for all ritual maritime activity. Pothis contain many different kinds of information. Details relating to wind direction at different seasons, data from almanacs, empirical knowledge of weather, tides, currents, depths of sea and dead reckoning for estimation of location of the vessel at sea may be found. Other aspects include charting, instrumentation, position finding and parallel sailing encompassing north-south divergences. The excerpts of the pothi illustrated in this exhibition are based on one of eight pothis in the holdings of the National Museum, New Delhi. One of the contributions of the works of Mahatma Gandhi was the importance that he gave to the Gujarati language; and an unexpected result of this was the creation of interest in traditional methods of sailing. It was in this way that the collection of pothis came into existence. Ultimately it was because of the interest taken by the late U.P. Shah of erstwhile Baroda that these pothis came to be acquired by the National Museum New Delhi in the 1980s. The pothis exhibited in the Exhibition have been sourced from the National Museum, Delhi



Source: National Museum, Delhi



Source: National Museum, Delhi



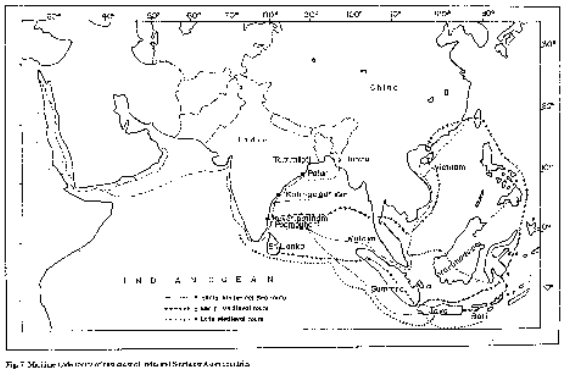
Source: National Museum, Delhi

MARITIME TRADITIONS OF THE KALINGA COAST

With numerous deltas providing natural anchorage, and forests and hill tracts close by for sourcing timber and ores, the Odisha coast on the Bay of Bengal was well suited to become an early centre for international trade. Ashoka's invasion of Kalinga in the third century B C was a consequence of its importance and prosperity , and Kalinga's commercial importance and association with international trade through the Bay of Bengal are seen from classical Greek texts. In the Raghuvamsa, Kalidasa referred to the king of Kalinga as the Mahodadhipati, or Lord of the Ocean, while other texts of the time make it appear that in the past the present Bay of Bengal was called the 'Kalinga Sea' (Kalingodresu) being dominated by the ships of Kalinga.

From May to September, the summer monsoons blow from the southwest, from Ceylon towards Kalinga. The pattern reverses from October to February. Early navigators would have exploited these seasonal winds, navigating by the stars, the colour of the water and observation of the flights of sea crows and

other homing birds. Using these winds, seafarers from Kalinga operated on the main sea routes to Southeast Asia and onward to China using the coastal route via Burma and stopping at Nicobar, or alternatively moving southwards down the coast, maybe with a stop at Ceylon and across the Bay of Bengal to Sumatra. Chinese texts of the 13th century mention two types of ships plying between Kalinga and Canton, one of which, the patua, an iron nailed seagoing boat of old, can still be seen nowadays used mostly for coastal fishing.



The epigraphic sources of the Malayo-Indonesian region mention a people called 'Kling', and early Javanese legends mention 'twenty thousand families were sent to Java by the prince of Kling.' Current festivals in the coastal tract of Odisha, like the 'Baito-Bandaano' festival at the time of Karthik Poornima (full-moon), with its floating offerings of baito-aloo (pumpkin) and the and 'Khudur Kuruni', where sisters pray for the safe return of their sailing brothers.

Reference

1. Maritime Heritage of India , edited by K S Behera

2. Early Maritime Activities of Orissa on the East Coast of India , by Sila Tripati in Man and Environment XXVII (1) – 2002

16TH CENTURY RE-CREATION OF BRINDAVAN IN BENGAL

Bishnupur may be regarded as the cultural centre of Bengal during 17th and 18th centuries. Established by the Malla kings and situated in the Bankura district of West Bengal, it was located at a distance of 200 km from modern Kolkata. The Malla kings were originally of the community of local forest dwellers. Later they were absorbed into the caste hierarchy being given recognition as Kshatriyas. The earliest reference to Bishnupur is from a Gupta inscription which mentions that Samudragupta, 335-380 BP, had received tribute from the local king of this area. The area is described as jungle terrain in the seventh-century travel account of Xuan Xang.

The stalwart of the family was Bir Hambir who received the area in grant from the Mughal emperor Akbar as jagir as a reward for his role in the Mughal –Afghan combat. Bir Hambir was converted to Vaishnavism by Srinibash Acharya, a direct disciple of Chaitanya Mahaprabhu. Due to this religious affiliation Malla kings engaged in close relations with the Vaishnava teachers of Brindavan which resulted in the cultural and religious transformation of Bengal.

The city of Bishnupur is conceptualized and extended on the basis of Vaishnava idioms. The transformation of the forested terrain of Bishnupur into a cultural center was equally achieved by launching comparable expressive forms and institutions to those established over the previous century at Brindavan. A physical transformation of the land and mapping of the sacred physical markers of Brindavan onto the Malla capital accompanied this process of consecrating Vaishnava territory in the seventeenth and eighteenth centuries.

A dominant mode for linking the two sites, seen for example in the verses of the Chaitanya Charitamrita, was the creation of narratives about the town, its deities and their distinctive features. Apart from the main royal complex, the city was adorned with various temples, water reservoirs, gardens and pavilions similar to those to be found in the layout of Brindavan. Besides the composition of devotional poetry by the rulers and their courtiers, temples were consecrated with similar names of Krishna as are found in Brindavan.

Madanmohan Temple, BIshnupur.

Tourist map of Bishnupur town showing location of temples

A 19th century topographical depiction of Vrindavan and its surrounding villages along be Yamuna River. The pilgrimage route passes through 12 vanas (forest) 24 upvanas (groves), and Mount Govardhana

PRELUDE TO MERCATOR'S MAP

By the sixteenth century, Portuguese eastward exploration and colonization of the Indian Ocean region continued apace after Vasco da Gama's voyage to Calicut. By this time, charts were made on the basis of magnetic courses, estimated distances and of observed latitudes. In the case of the latitude chart, the newly discovered lands were plotted according to their latitudes and the courses to other places, ignoring the sphericity of the earth. The result was a type of representation that depended, first, on the set of routes used in its construction; and second, on the spatial distribution of the magnetic declination from true north at the time the courses were measured.

The map here credited to João Teixeira Albernaz records the progress of maritime and land exploration, particularly in the Portuguese colonies. The compass courses are seen on the cross meridians of longitude without changing direction relative to magnetic north. The lines, called rhumbs, when adjusted for magnetic declination on compasses, by the cartographic set point method, allowed nautical cartography to determine the longitudinal extent of the littoral coastline. This made it possible to ignore earlier Ptolemaic cartographic representations that dated back another 1500 years.

The chart of Arabia and India here is from the so-called Atlas Miller, named after librarian Bénigne Emmanuel Clement Miller of the National Library of France who acquired it in 1897. The Atlas was created jointly by three Portuguese cartographers and a miniature painter. This panel shows the Indian Ocean, was produced in 1519, soon after the expeditions of da Gama, Cabral and Albuquerque into the region. The dozen charts of the Atlas reflect the extraordinary explosion of geographical and anthropological knowledge, exotically illustrated with luxurious and exuberant artistic representations. The "secret" of the Atlas Miller is that it attempts to contradict the idea that the circumnavigation of the globe is possible. The Atlas Miller is the last Portuguese attempt to thwart Columbus's plan. What is most surprising is that for a sizable period of time, the same cartographers took part in two projects, producing the Atlas Miller in Lisbon and preparing the voyage by Magellan in Seville.

Reference

1. The enormous Isthmus: interpreting the shape of Africa in the nautical cartography of the Renaissance, paper presented by Joaquim Alves Gaspar (alvesgaspar@netcabo.pt) at the XVI International Reunion for the History of Nautical Science, Bremerhaven, 3-6 October 2012, Centro Interuniversitário de História das Ciências e da Tecnologia (CIUHCT), Faculty Sciences, University of Lisbon, Portugal.

Sébastian Cabot, a Venetian merchant and John Cabot, Sébastiane's navigator, sailed on behalf of Henry VIII of England and Spain, as "pilot-major" of His Majesty the Emperor Charles the Fifth. This world map printed in 1544 is valuable for the 17 inscriptions that it possesses. Like many maps of the

Sébastien Cabot, Anvers, 1544,, Gravure aquarellée, Source: Bibliothèque nationale de France

Age of Exploration, it inscribes men, animals, and the supposed 'natives' into the body of the map. For example, in the section depicting India, there is an illustration of a wife committing sati at the death of her husband. The related inscription also makes reference to the richness of the king of Bengal and to articles of trade.

Map of the Indian Ocean, João Teixeira Albernaz, 1649, Manuscript on vellum, 70.5 x 84.5 cm, Source: Bibliothèque nationale de France

João Teixeira Albernaz was a member of a large family of cartographers- "His Majesty the King of Portugal" installed in Lisbon for several generations. It was quite common for ships that sailed from Lisbon to the East Indies to carry such maps. The vignettes mark the important ports for the economic activity of the Portuguese. This is also evident where the coat of arms is used to mark their areas of interest.

Miller Atlas

Work of Lopo Homen, Pedro and Reinel Jorge & illustrator Antonio de Holland, 1519.
Illuminated manuscript on vellum, 41.5 × 59 cm and 61 × 118 cm.
Source: Bibliothèque nationale de France

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